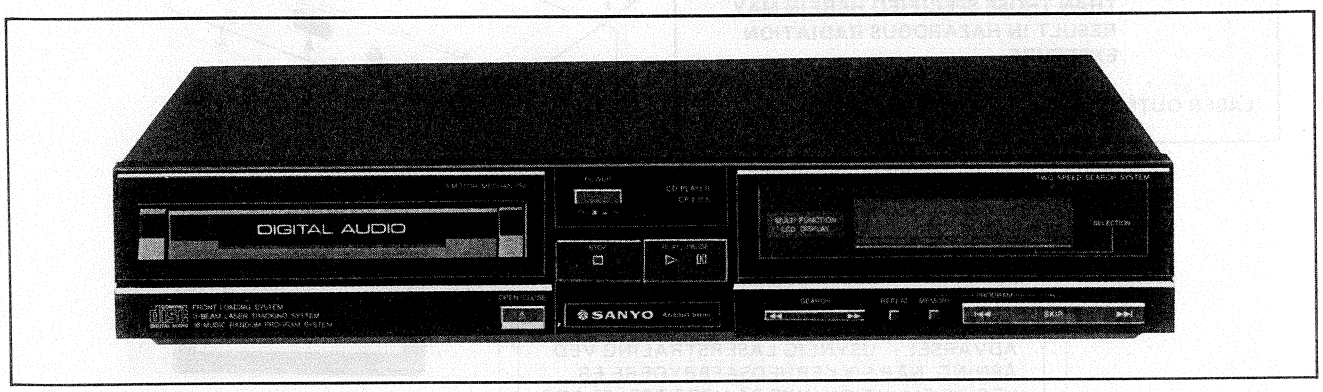
SERVICE MANUAL

COMPACT DISC PLAYER

SANYO

CP6155

(EURORE/W.GERMANY)



SPECIFICATIONS

Audio

Channels	2 channels
Frequency response	5 – 20,000 Hz
Dynamic range	96 dB
Channel separation	90 dB (1 kHz)
Distortion	0.03% (1 kHz)
Wow and flutter	Undetectable
Outputs	1.8V/1k ohms

Signal format

Sampling frequency	44.1 kHz
Quantization	16 bits linear/channel
Transmission rate	4.32 Mbit/sec.

Pick-up

System	Objective drive system light pick-up
Light source	Semiconductor laser
Wave length	790 nm

General

Power supply	AC 220V, 50 Hz
Power consumption	14W
Dimensions (approx.)	420(W) x 75(H) x 270(D) mm (16-1/2" x 3" x 10-5/8")
Weight (approx.)	3.3 kg (7 lbs. 5 ozs)

Specifications and design subject to change without notice.

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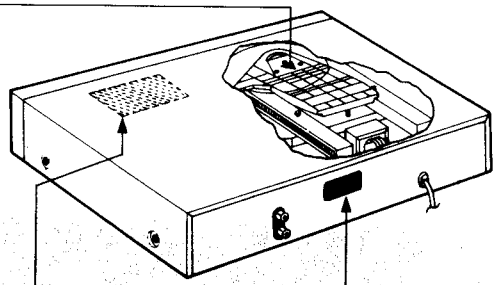
Reference No. WM-19516

LASER BEAM SAFETY PRECAUTIONS

(1) A Pick-up that emits a laser beam is used in this compact disc player.

CAUTION – USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE

LASER OUTPUT – – – – – 1.0mW Max. (CW)



CAUTION – INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

ADVARSEL – USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

VARNING – OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.

VORSICHT – UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT DEM STRAHL AUSSETZEN.

VAROITUS ! LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ. LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN MUKAINEN VAROITUSMERKKI.

CLASS 1
LASER PRODUCT

ACHTUNG – WENN ANDERE ALS DIE HIER SPEZIFIZIERTEN BEDIENUNGS- ODER JUSTIEREINRICHTUNGEN BENÜTZT ODER ANDERE VERFAHRENS-WEISEN AUSGEFÜHRT WERDEN, KANN DIES ZU GEFÄHRLICHER STRAHLUNGSEXPOSION FÜHREN.

ATTENTION – L'EMPLOI D'ORGANES DE COMMANDE OU DE RÉGLAGE, OU L'EXÉCUTION DE PROCÉDURES, AUTRES QUE CEUX SPÉCIFIÉS DANS LE MODE D'EMPLOI, PEUT PROVOQUER UNE EXPOSITION DANGEREUSE AU RAYONNEMENT.

CAUTION – USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

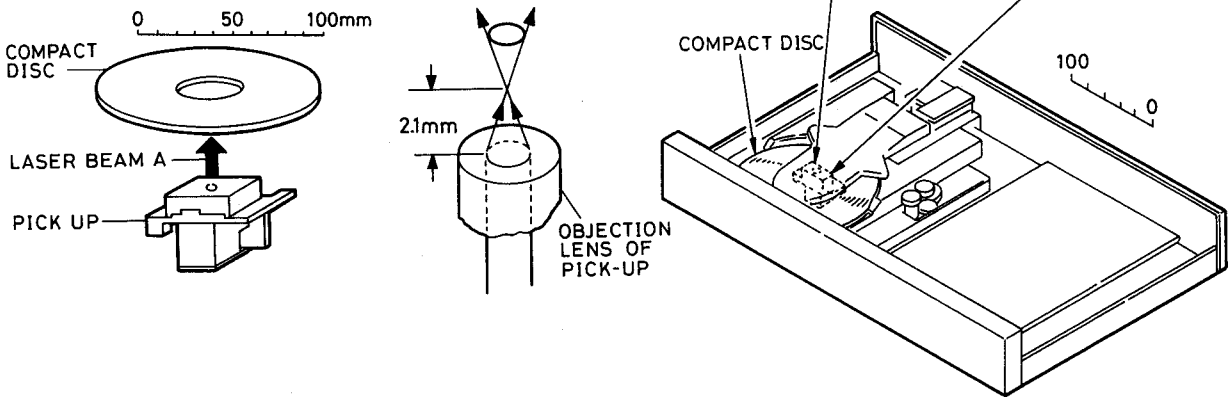
OPGELET – HET GEBRUIK VAN REGELAARS OF HET MAKEN VAN AFSTELLINGEN E.D. DIE NIET IN DEZE GEBRUIKSAANWIJZING ZIJN BESCHREVEN KAN LEIDEN TOT SCHADELIJKE STRALINGEN.

VARNING – BRUK AV KONTROLLER, JUSTERINGAR ELLER MANÖVRERING AV APPARATEN ANNAT ÄN HÄRI ANGIVNA KAN INNEBÄRA STRÅLNINGSRISK.

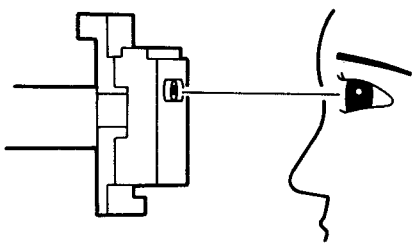
CAUTELA – L'USO DI COMANDI, AGGIUSTAMENTI O PROCEDIMENTI DIVERSO DA QUELLO QUI SPECIFICATO PUÒ DAR LUOGO AD ESPOSIZIONE A RADIAZIONI PERICOLOSE.

LASER BEAM SAFETY PRECAUTIONS

(2) The laser beam is emanated from the location shown in the figure.



If the disc chuck lever is removed, the pick-up is exposed.
Do not look at the pick-up with the power switch ON.



Do not look directly at the laser beam coming from the pick-up or allow it to strike against your fingers, skin, etc.

Do not apply power if there is a broken part in the laser output section of the pick-up.

LASER BEAM SAFETY PRECAUTIONS

(3) Description of safety interlock circuit.

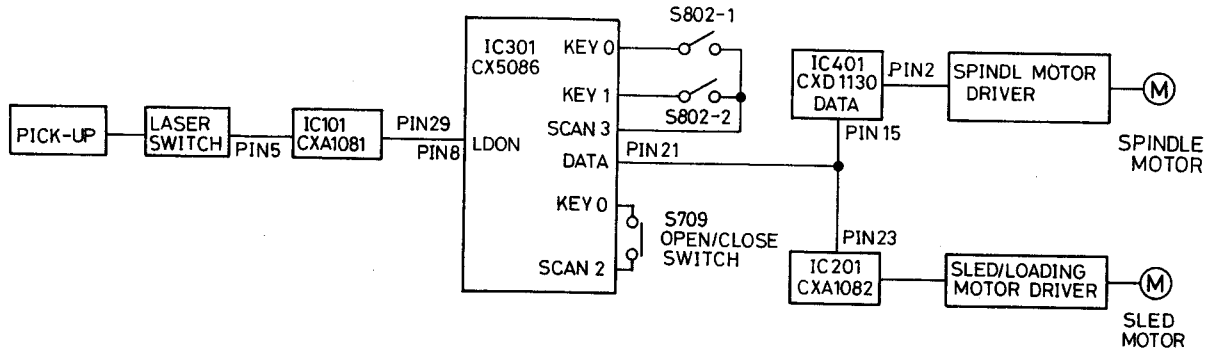


Figure 1 Safety Interlock Circuit Diagram

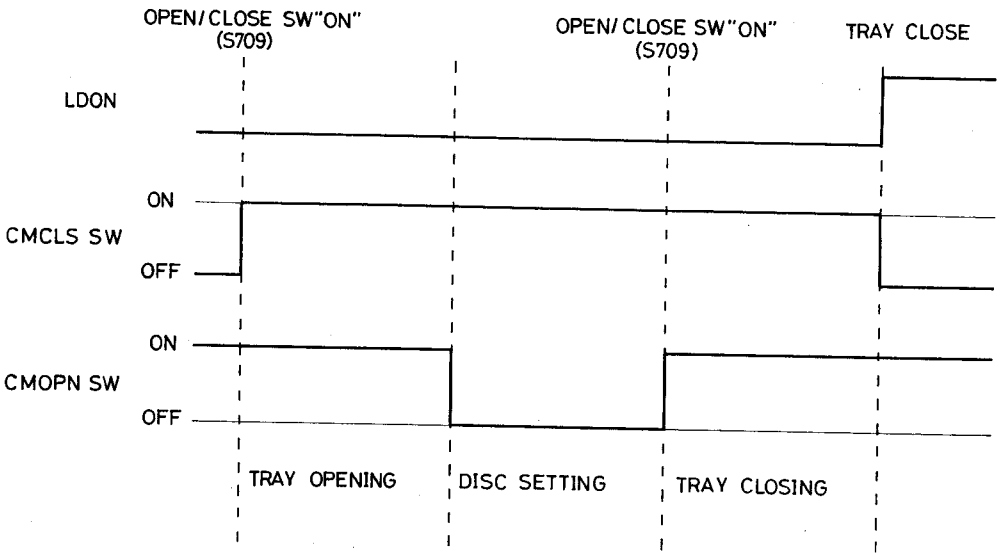


Figure 2 Time Chart of IC pins

Function of the IC pins of Figure 1.

IC301

LDON (Pin 8) : Signal which turns laser power ON.

Safety Interlock Operation

1. Press OPEN/CLOSE button.
2. When the disc is opened, CMCLS switch goes from "off" to "on" by Tray OPEN/CLOSE switch (S709). Please refer to Fig. 3.
3. When disc tray is completely open, CMOPN switch becomes "off".
4. Place a disc on disc tray, and press OPEN/CLOSE button.
5. When the disc is closed, CMOPN goes from "off" to "on".
6. When disc tray is completely closed, CMCLS goes from "on" to "off".

LASER BEAM SAFETY PRECAUTIONS

Summary

* A disc is placed on the disc tray.
* The disc tray is completely closed.
* Operation button is pressed.

When the above conditions are fulfilled, the IC301 LDON terminal (pin 8) becomes "High", thus emitting the laser beam.

Structural Safety Interlock

This model has a disc chuck lever and top lid. This disc chuck lever and top lid prevent to expose the laser beam for users.

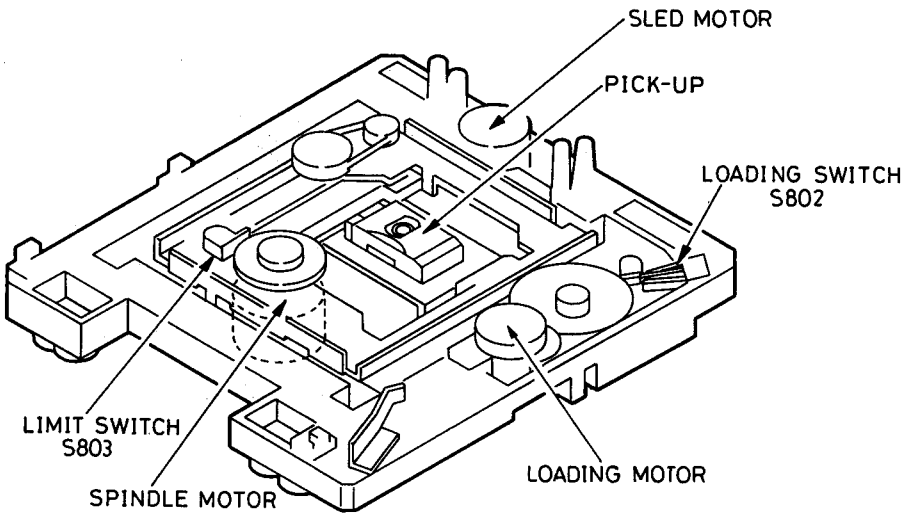


Figure 3 Mechanism Parts Location

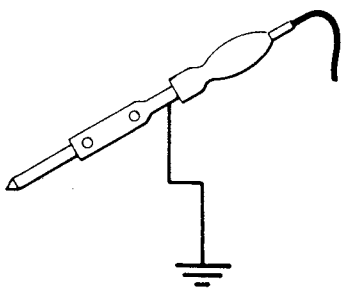
BEFORE REPAIRING THE COMPACT DISC PLAYER

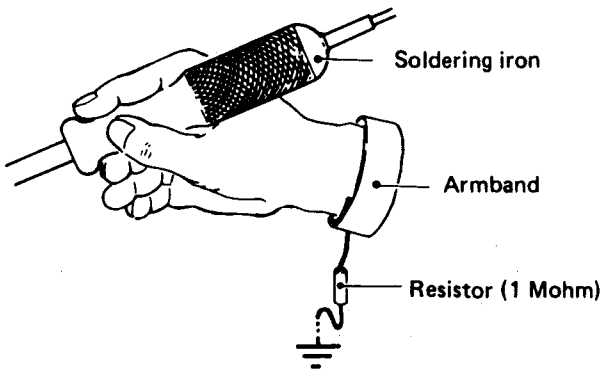
1. Preparations

a. Many ICs, LSI and the pick-up (laser diode) are used in the compact disc player. These components are sensitive to static electricity, and might be damaged by static electricity or high voltage, so particular care should be taken regarding this point.

b. Many precision components and the lens are used in the pick-up.
Never attempt to make repairs, or to store parts, where the temperature or humidity is high, where magnetism is strong, or where there is much dust.

2. Notes regaring repairs





a. Be sure to first disconnect the power plug before attempting to replace any component.

b. All tools, instruments, etc., used for measuring must be grounded.
Grounding can be accomplished by using a condutive metal sheet on the work bench.

c. To prevent AC leakage of the soldering iron, ground its metal part.

d. Repair personnel must be grounded.

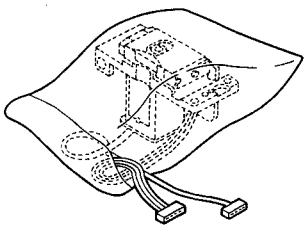
e. Do not look directly at the laser beam coming from the pick-up or allow it to strike against your fingures, skin etc.

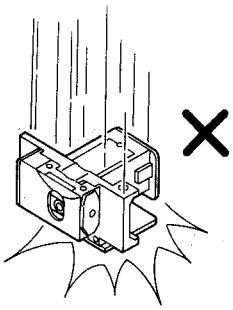
HANDLING THE PICK-UP

1. Shipping and storage cautions

a. The pick-up must be stored in a conductive bag until immediately prior to its use.

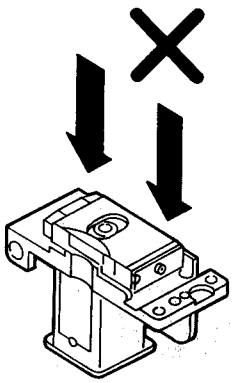
b. Do not drop it or subject it to impacts.



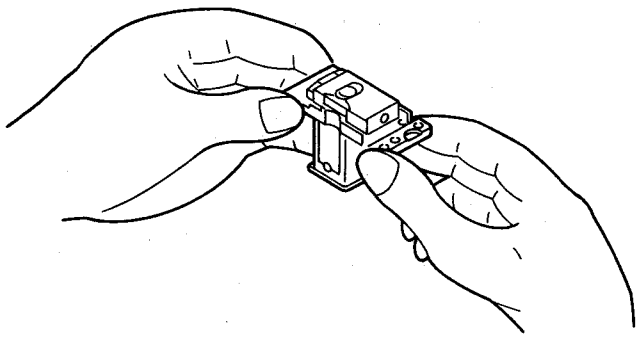


2. Repair cautions

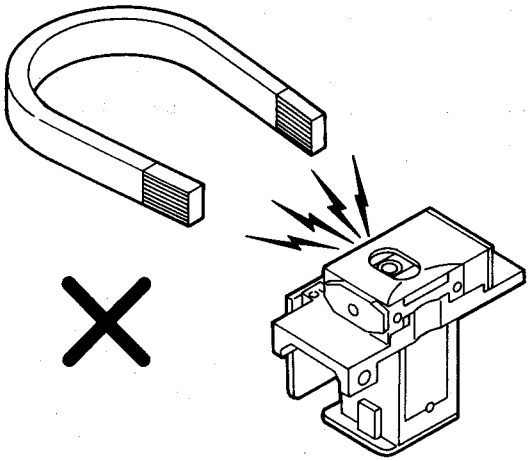
a. When handing the pick-up, be careful not to give it undue force or shock by your hands. Otherwise the pcik-up may malfunction or the PCB may be cracked.



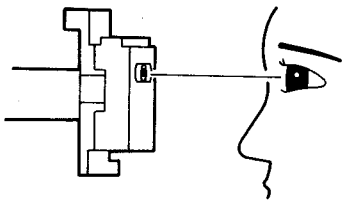
b. The pick-up which has been minutely adjusted before shipment as one part. Never touch and move the adjusting points and setscrews of the pick-up unless otherwise described in the item of adjustment to avoid damage.



c. A strong magnet is used in the pick-up.
Do not bring a magnet or other magnetized object near to it.



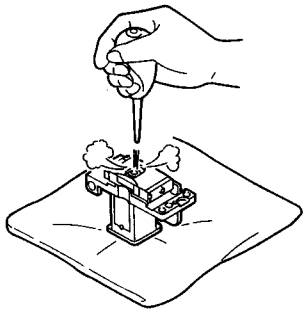
d. Eyes may be injured if the laser beam enters.
Take great care to be absolutely sure that the laser beam never enters the eyes.
Do not apply power if there is a broken part in the laser output section of the pick-up.

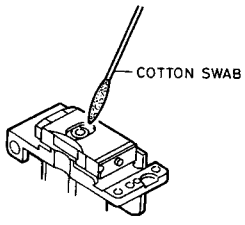


Do not look directly at the laser beam coming from the pick-up or allow it to strike against your fingers, skin, etc.

e. Cleaning the lens

* If dust gets on the lens, clean it away by using an air brush such as used for a camera lens.
* The lens is held in place by a spring.
If the center of the lens is dirty, carefully clean it using cotton swab moistened with **isopropyl-alcohol.** Since special coating is made on the surface of the lens which is made of plastics, do not use other kind of alcohol and cleaning fluid to prevent damage to the lens. Also, be carefull not to bend the lens spring when cleaning.

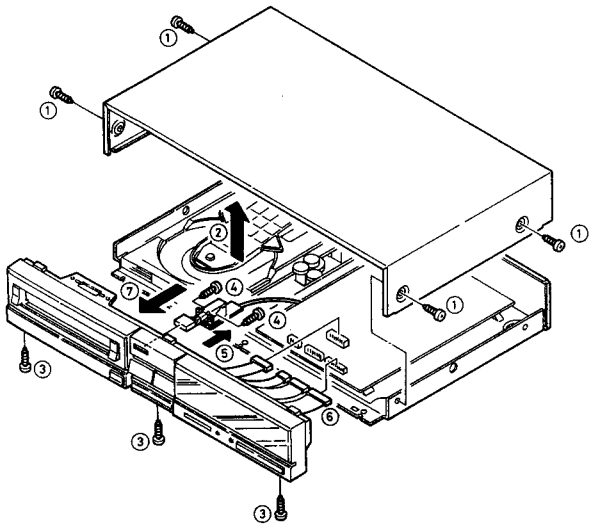




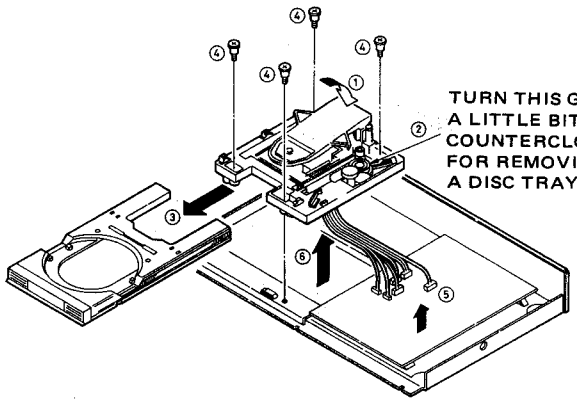
HOW TO DISASSEMBLE THE UNIT

* Remove the compact disc if there should be one on the disc tray.
* Switch the power OFF, and unplug the AC power cord from an AC outlet.
* Disassemble in the numerical sequence.

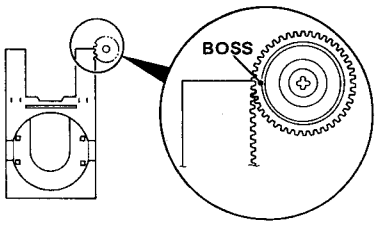
1. Removal of cabinet and front panel



2. Removal of mechanism and disc tray

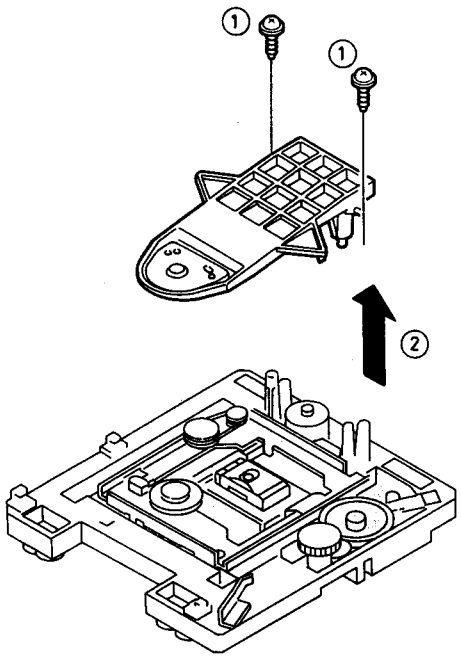


When reinserting the disc tray, meet the tip of the disc tray with the boss of the gear as shown in figure.

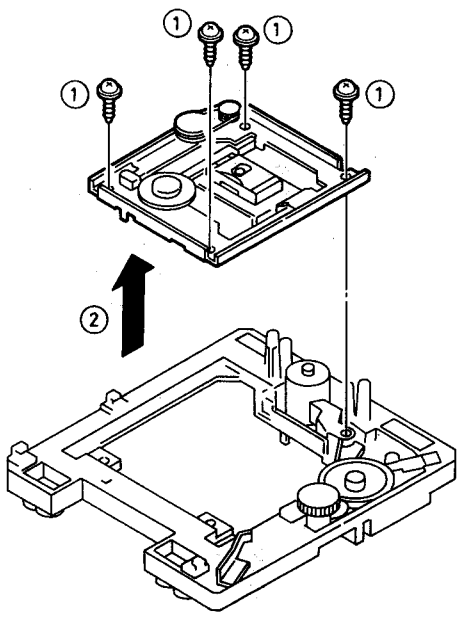


3. Replacement the pick-up

a. Removal of disc chuck lever

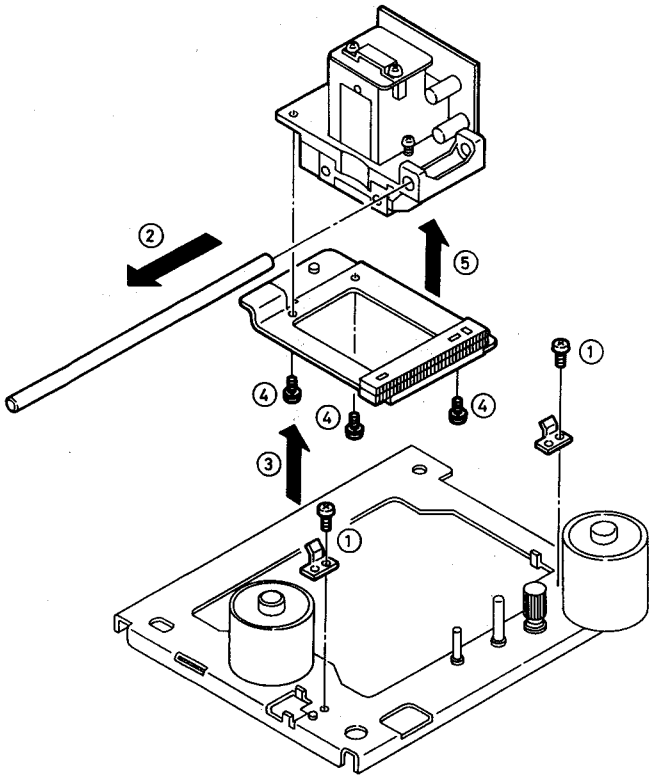


b. Removal of mechanism chassis

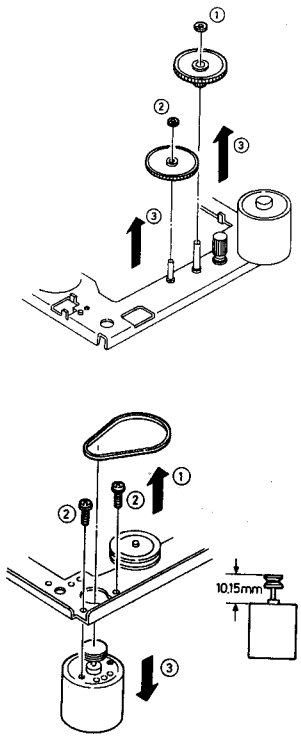


HOW TO DISASSEMBLE THE UNIT

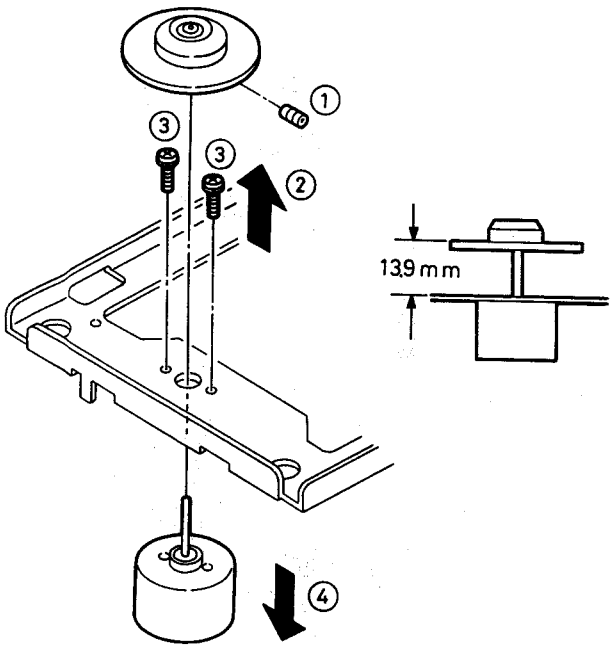
c. Removal of pick-up



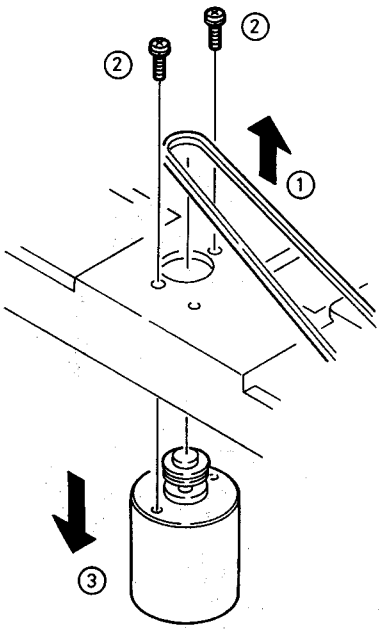
4. Removal of the sled motor and belt



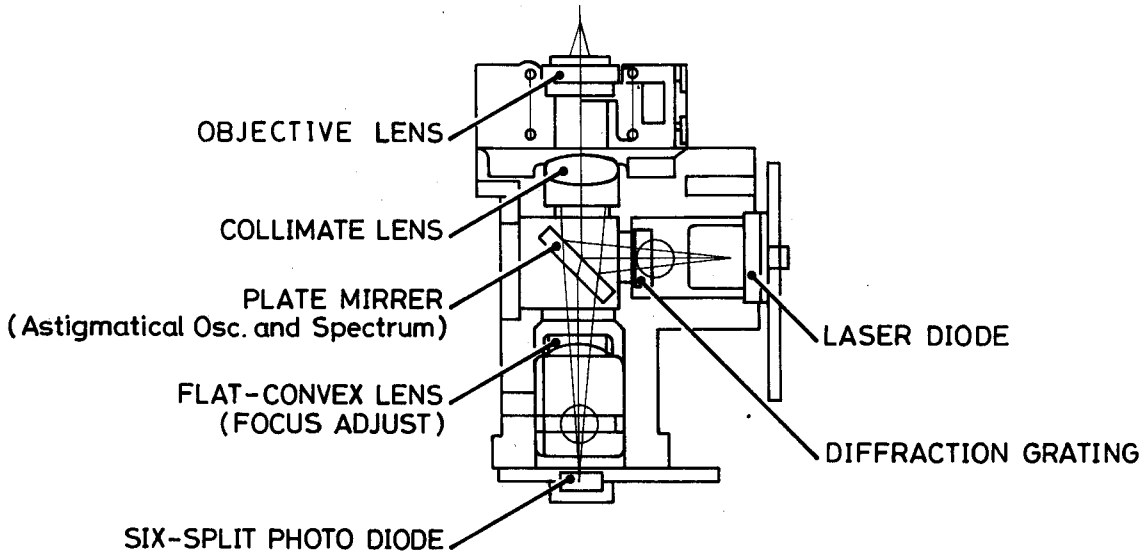
5. Removal of the spindle motor

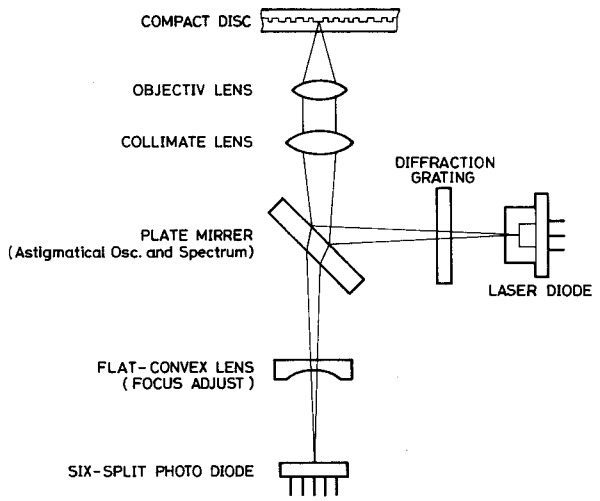


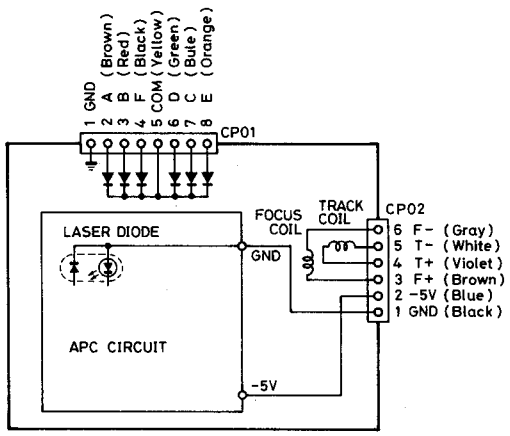
6. Removal of the loading motor.

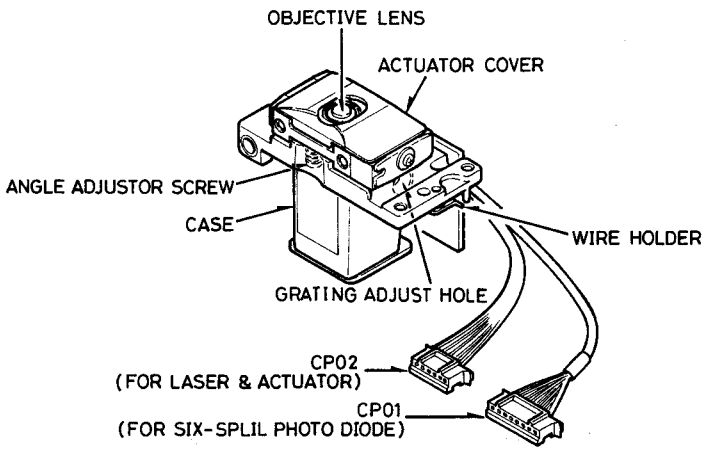


DETAILS OF PICK-UP

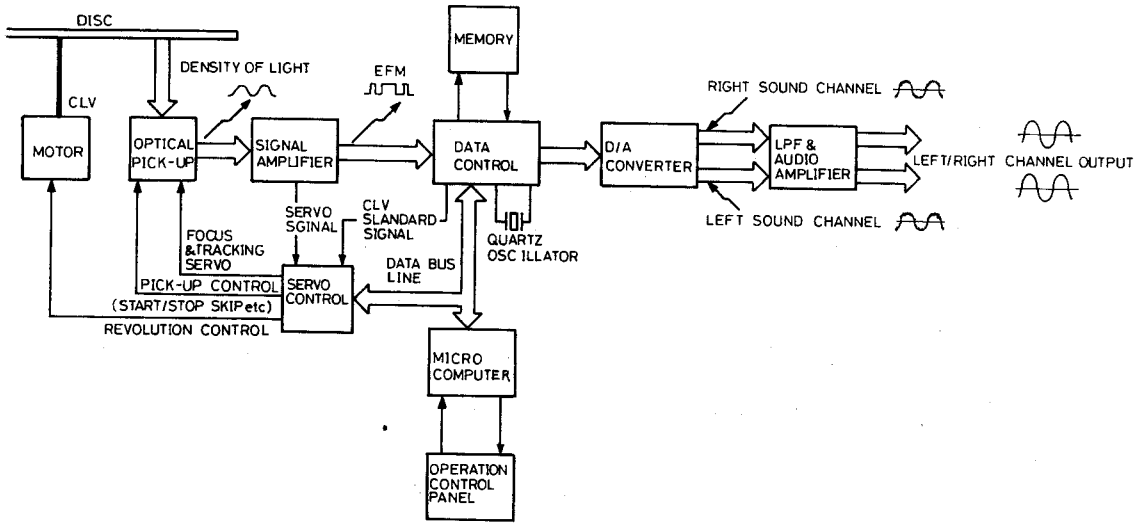




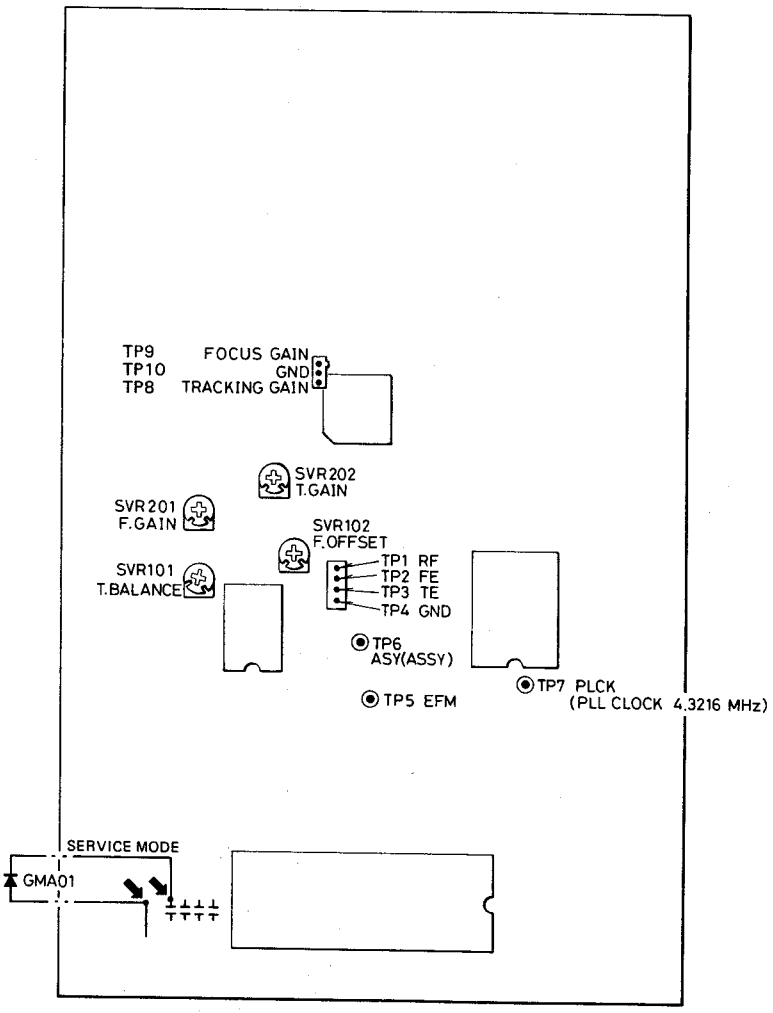




BLOCK DIAGRAM (1)



PARTS LOCATION



NOTE: Initial setting positions for SVR are indicated above.

ADJUSTMENT

So far we have presented explanations regaring compact disc player handing, notes prior to repair, handing the pick-up and disassembly of the unit. Be sure to carefully read these instructions before making any adjustments.

Test Discs Required for Adjustments

No.	Designation	Description (manufacturer)
1	414 245-2	for demonstration (Polygram)

NOTES:
1. Test discs are subject to change without notice.

Measuring Instruments Required for Adjustments

Designation	Model	(manufacturer)
Oscilloscope	SS5711 (100 MHz, 3 phenomena observation)	(Iwasaki Communications)
Storage scope	DSS6521 (memory scope)	(Kikusui Electric)
AC digital voltmeter	Digital tester or digital multi-meter can also be used.	
AF oscillator	Low frequency oscillator	
Band pass filter	See attached figure on page 13.	
Frequency counter	More than 5 MHz	
Adaptor for grating	141-4-290T-62600	(SANYO)
Driver for grating	141-2-862T-00700	(SANYO)

NOTES: 1. Adjustments are also possible by using instruments from other manufacturers if the performance corresponds to that described above.
2. Use a probe when using an oscilloscope, memory scope, digital voltmeter to observe the signal. Be sure to connect the probe ground to the indicated ground line.

Pick-up Adjustment

When a pick-up replacement is made, this adjustment must be needed.

Connection

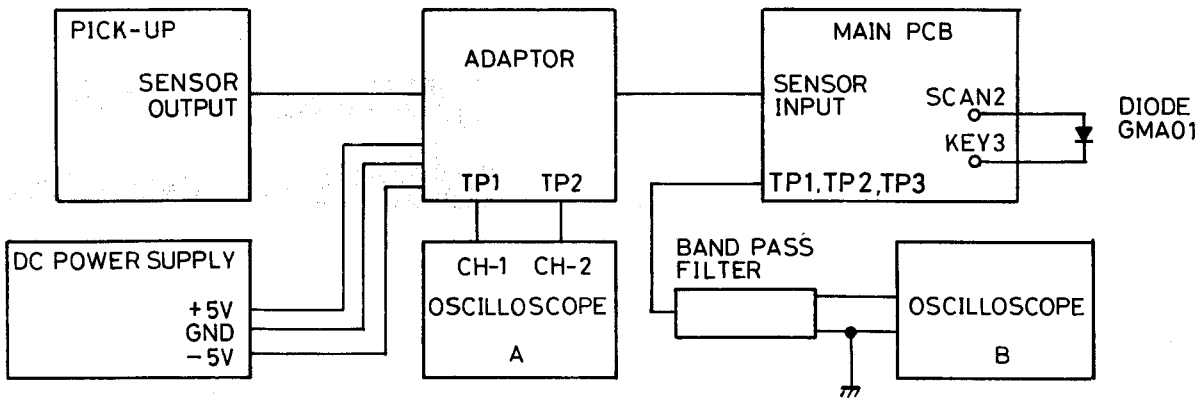


Figure 1

ADJUSTMENTS

Grating Adjustment

This is the adjustment of sub beams "E" and "F" against main beam of the pick-up, getting them onto the pit of the disc as shown in Figure 2 (b).

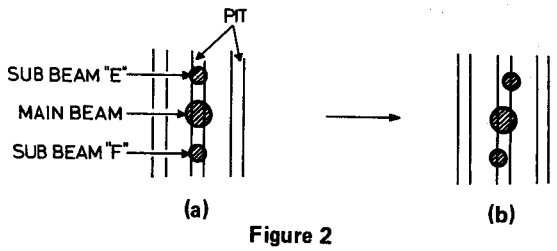


Figure 2

1. Connect the socket of sensor output from the pick-up to input of the adaptor and output of adaptor to input plug of sensor on the MAIN PCB where socket of sensor output of the pick-up to be connected.
2. Connect a diode (GMA01 or equivalent) between SCAN2 and KEY3 on the MAIN PCB to make the unit in service mode. See Parts Location)
3. Turn on the power of the unit. Then LCD displays as Figure 3.

Figure 3

4. Load the test disc No. 1.
5. Press the STOP button.
6. Press the REPEAT button. Then the disc start gyrating and the unit will be in focus servo "ON" and tracking servo "OFF" conditions.
7. Connect TP1 and TP2 of the adaptor to CH-1 and CH-2 of the oscilloscope A. Set the range of CH-1 and CH-2 of the oscilloscope A to 50mV/div. and 10μs/div. and set it to X-Y mode.
8. Turn off the switch on the adaptor to set it in LPF "ON".
9. Insert the special adjusting driver into the adjusting hole of the pick-up. (Figure 4) Turn the driver a little bit at a time so that the waveform on the oscilloscope A becomes straight as shown in Figure 5 (a).

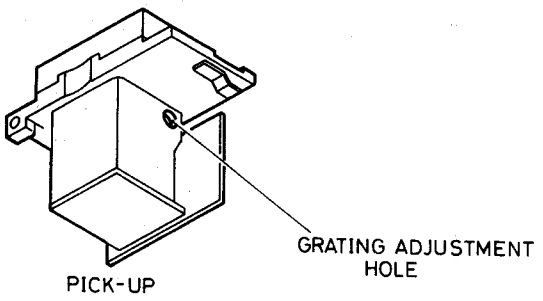


Figure 4

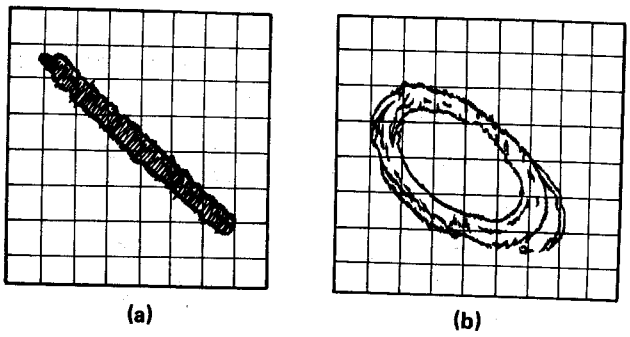


Figure 5

10. Observe the TE signal waveform from TP3 on the oscilloscope B and adjust tracking balance with SVR101 so that the waveform is vertically symmetrical relative to 0V.
11. Press the MEMORY button and turn on the switch on the adaptor to set it in LPF "OFF" condition.
    When trigger is applied to CH-1 with the oscilloscope A at "CHOP" mode, the waveform is as shown in Figure 6 (a). If the waveform is as shown in Figure 6 (b), spotting of each beam was supposed to Figure 7. In this case, following re-adjustment is needed.

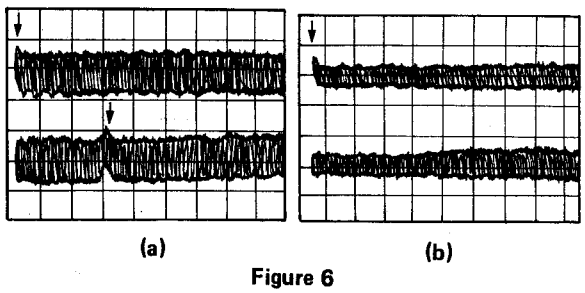


Figure 6

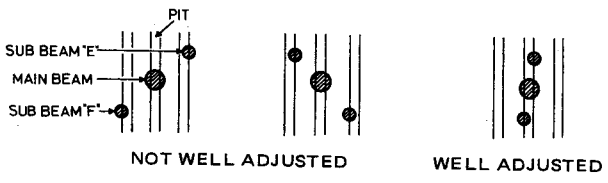
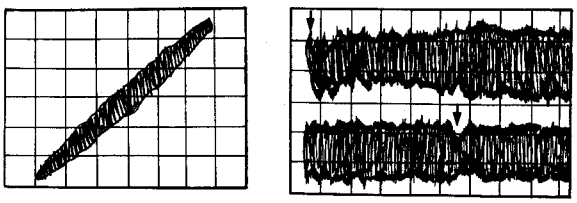


Figure 7

a. Press the REPEAT button.
b. Turn the special adjusting driver so that the waveform on the oscilloscope A becomes as shown in Figure 8 (b).
c. Fathermore, turn off the switch on the adaptor and set the oscilloscope A to X-Y mode. At this time, if the waveform is as shown in Figure 8 (a), turn the driver clockwise. If the waveform is as shown in Figure 5 (b), turn the driver a little bit at a time clockwise or counterclockwise because upright adjusting position is near.
Adjust the waveform as shown in Figure 5 (a).
d. Follow step 11 to confirm that the adjustment is precisely made.



(a) (b)

Figure 8

Skew Adjustment of Mechanism

12. Press the STOP button and then press the SEARCH ▸▸ button to adavance the pick-up to where about 40mm away from center of the disc.
13. Press the REPEAT button. When the disc starts gyrating, press the MEMORY button. The unit becomes normal play mode.
14. Observe voltage of the FE signal waveform from TP2 on the oscilloscope B and memorize it. See Figure 9.
Press the STOP button and adjust the focus error offset with SVR102 so that the voltage on the oscilloscope B is same as the voltage observed before.

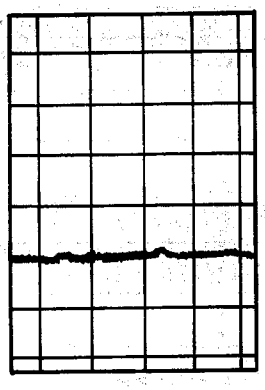


Figure 9

15. Press the SEARCH ▸▸ button to move the pick-up to outermost position of the disc where there is signal.
16. Press the REPEAT button. When the disc starts gyrating, press the MEMORY button.
17. Observe the RF signal waveform from TP1 on the oscilloscope B. Turn the skew adjusting screw so that the waveform is as shown in Figure 11 and jitter becomes minimum.

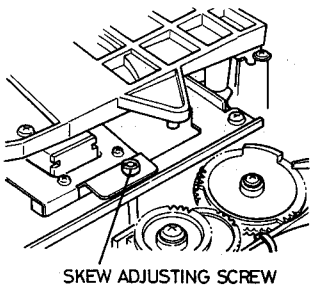


Figure 10

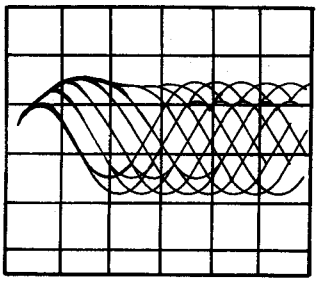


Figure 11

18. Follow step 9.
19. When the adjustments are finished, apply screw-lock onto the skew adjusting screw and into the grating adjusting hole.

ADJUSTMENT

Order	Adjustment
1	PLL-VCO
2	Tracking balance
3	Focus offset
4	Focus gain
5	Tracking gain

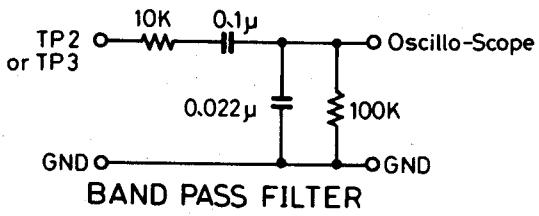


Figure 12

NOTE: The initial set positions of the adjustment controls are shown in "Parts Location" on page 9.

1. PLL-VCO (Phase Locked Loop Voltage Control Oscillator) Adjustment

Test disc	Measuring instrument	Connection point	Adjustment location	Adjustment value
No. 1	Frequency counter	TP7 (PLL-LPF output signal	SVR203	4.32MHz ±0.1MHz

(Frequency counter ground . . . TP4)

1. Connect the frequency counter to TP7.
2. Short TP4 and TP6 (ASY) electrically.
3. Turn on the power of the unit.
4. Adjust SVR203 so that the frequency counter shows 4.32MHz ±0.1MHz.

2. Tracking Balance Adjustment

Test disc	Measuring instrument	Connection point	Adjustment location	Adjustment value
No. 1	Oscilloscope	TP3 (TE signal)	SVR101	Symmetrical waveform

(Oscilloscope ground . . . TP4)

1. Set the SVR101 at its initial set position.
2. Connect the oscilloscope to TP3 (TE).
3. Play the test disc.
4. Press the SEARCH ▸▸ or ◂◂ button to do it.
5. Adjust SVR101 so that the TE (Tracking Error) signal waveform of TP3 on the oscilloscope is vertically symmetrical relative to 0V. (See Figure 13)

Adjustment by the service mode

1. Follow steps 1 and 2 as above.
2. Connect a diode (GMA01) between STW (SCAN2) and C307 capacitor (KEY3) as shown in parts location.
3. Turn on the power and load the test disc.
4. Press the STOP button and then press the REPEAT button.
5. Adjust SVR101 so that the TE (Tracking Error) signal waveform of TP3 on the oscilloscope is vertically symmetrical relative to 0V.

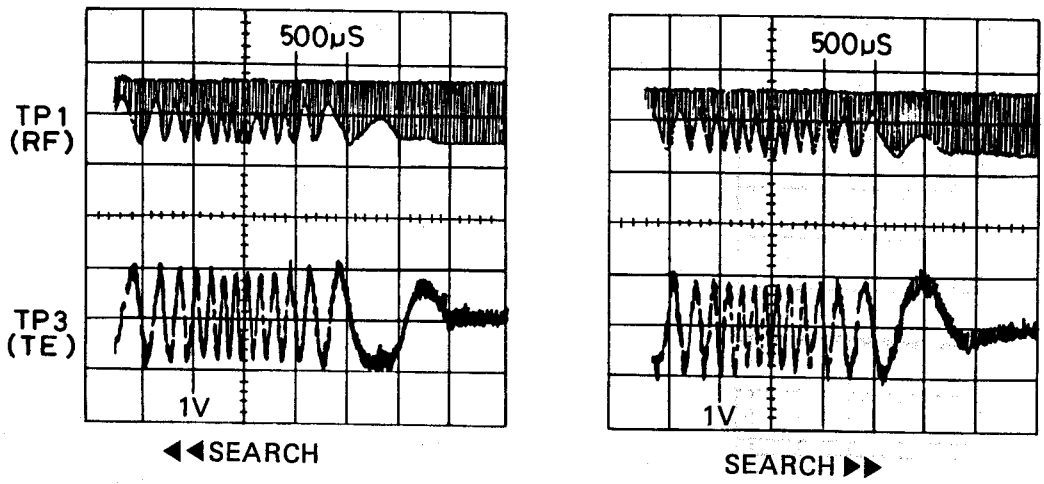


Figure 13

3. Focus Offset Adjustment

Test disc	Measuring instrument	Connection point	Adjustment location	Adjustment value
No. 1	Oscilloscope	TP1 (RE signal) TP2 (EF signal)	SVR102	The same voltage for play and stop modes.

(Oscilloscope ground . . . TP4)

1. Set SVR102 at its initial set position (mechanical center position).
2. Connect the oscilloscope to TP2 (FE signal) and ground of the oscilloscope to TP4. Set the range of the oscilloscope to 200mV/div.

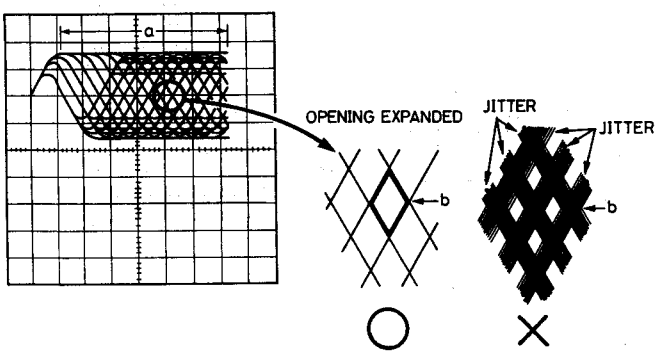


Figure 14

3. Play back the test disc and observe the DC offset voltage available at TP2 (Focus Error signal) with the oscilloscope and memorize that voltage.
4. Press the STOP button.
5. Adjust SVR102 so that the DC offset voltage then available at TP2 is the same as the voltage observe in step 3.
6. Press the PLAY button again and confirm that the waveform of RF signal (TP1) is not distorted abnormally, eye pattern is clear and the amplitude of the waveform is almost maximum. See Figrue 14.

Note:
If the eye pattern "b" in Figure 14 has a wide opening, this means there is little jitter in the playback sound; if it has a narrow opening, this means there is much jitter in the playback sound.
Meaning of Jitter: Jitter is such phenomenon that when a compact disc is played back, the output sound may fluctuate due to the variation of medium.

4. Focus Gain Adjustment

Test disc	Measuring instrument	Connection point	Adjustment location	Adjustment value
No. 1	Memory scope	TP2 (FE signal) TP8 (IC201 pin 8)	SVR201	400mV p-p

(Memory scope ground . . . TP4)

1. Set SVR201 at its initial set position (mechanical center position).
2. Connect the AF oscillator, band pass filter and memory scope to TP8 and TP2 as shown in Figure 15.
3. Play back the test disc.
4. Set the output of AF oscillator to 400Hz, 0.5V rms.
5. Adjust SVR201 so that the voltage of FE signal waveform on the memory scope is 400mV p-p.

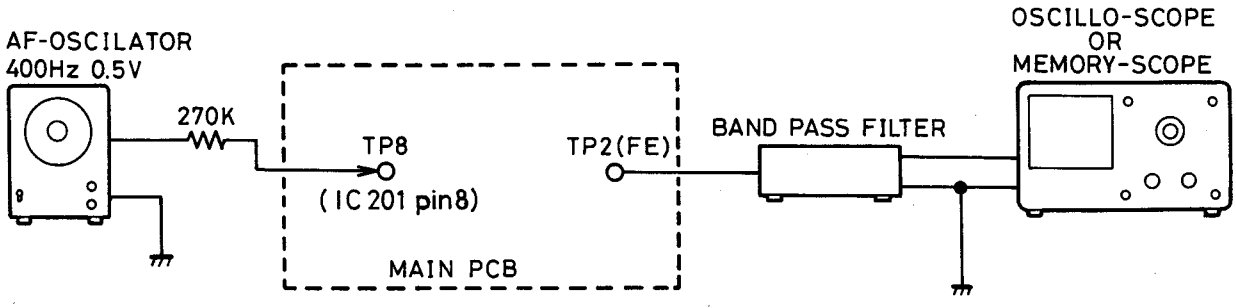


Figure 15

5. Tracking Gain Adjustment

Test disc	Measuring instrument	Connection point	Adjustment location	Adjustment value
No. 1	Memory scope AF oscillator	TP9 (IC201 pin 12) TP3 (TE signal)	SVR202	400mV p-p

(Memory scope ground . . . TP4)

1. Set the SVR202 at its initial set position (mechanical center position).
2. Connect the AF oscillator, memory scope and band pass filter to TP9 and TP3 as shown in Figure 16.
3. Play back the test disc.
4. Set the output of AF osciallator to 400Hz, 0.5V rms.
5. Adjust SVR202 so that the voltage of the TE signal waveform is 400mV p-p.

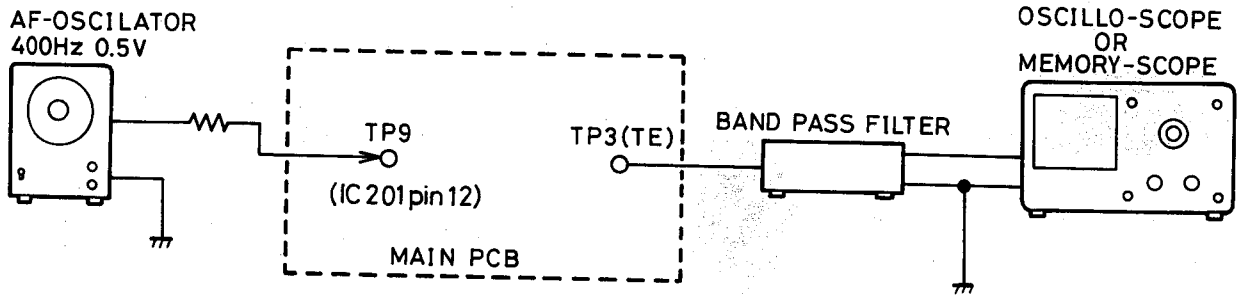
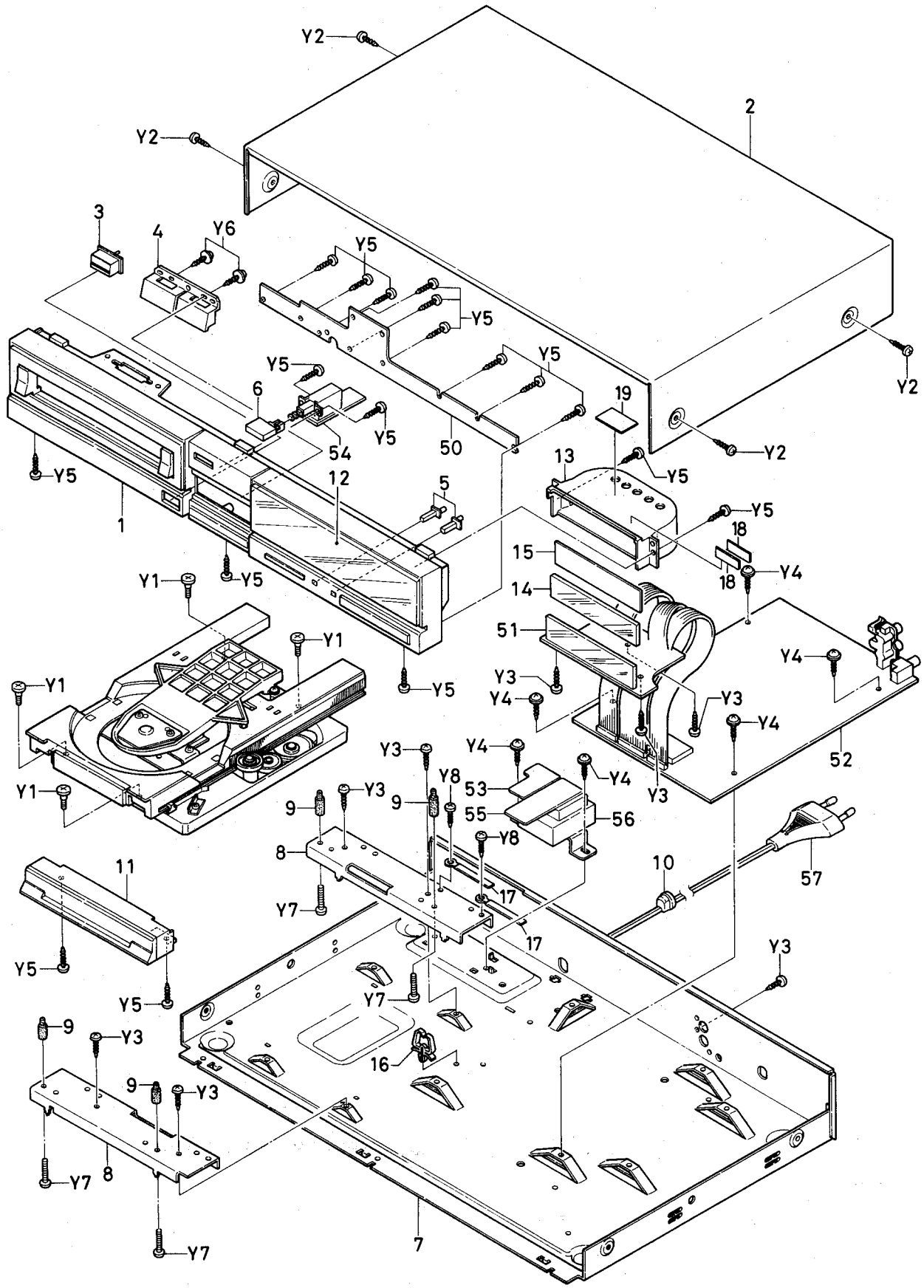


Figure 16

CABINER & CHASSIS EXPLODED VIEW



PARTS LIST

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

PACKING & ACCESSORIES

Ref. No.	Part No.	Description
	141-6-133T-80410	INNER CORR CASE (EUROPE)
	141-6-133T-80414	INNER CORR CASE (WEST GERMANY)
	141-6-145T-07000	FOAM PLASTIC CASE, LEFT
	141-6-145T-07100	FOAM PLASTIC CASE, RIGHT
	141-6-235T-40601	INNER POLYE LAMINA COVER, 400X600MM
	141-6-409T-41904	INSTRUCTION MANUAL (EUROPE)
	141-6-409T-41908	INSTRUCTION MANUAL (WEST GERMANY)
	141-6-479T-66100	LABEL, LASER, MECHANISM MTG.
	141-6-479T-66000	LABEL, CLASS 1
	141-6-318T-42000	PAD
	4-243T-41100	LEAD CORD, SYNCRO REC
	4-243T-37173	LEAD CORD
or	4-243T-43173	LEAD CORD

CABINET & CHASSIS

Ref. No.	Part No.	Description
1	141-0-122T-67501	FRONT PANEL ASSY
2	141-0-111T-71000	CABINET ASSY
3	141-2-160T-82601	PUSH BUTTON, OPEN/CLOSE
4	141-2-160T-82101	PUSH BUTTON, PLAY/PAUSE/STOP
5	141-2-160T-64003	PUSH BUTTON, REPEAT/MEMORY
6	141-2-160T-60303	PUSH BUTTON, POWER SWITCH
7	141-0-125T-42512	BOTTOM LID ASSY
8	141-2-290T-21305	BRACKET, MECHANISM MTG.
9	141-2-445T-32700	RUBBER CUSHION, MECHANISM MTG.
10	141-2-464T-14400	FIXER, POWER CORD
11	141-2-154T-20400	ESCUTCHEON, FRONT PANEL, LEFT
12	141-2-131T-59601	CLEAR WINDOW, FRONT PANEL, RIGHT
13	141-2-329T-11700	REFLECTOR, LCD
14	141-2-132T-30400	SIGN WINDOW, LCD
15	141-2-247T-82300	SHEET, LCD
16	141-2-464T-24000	FIXER, LEAD MTG., BOTTOM LID MTG.
17	141-2-472T-12600	LUG, LEAD MTG.
18	141-2-132T-30500	SIGN WINDOW, LCD REFLECTOR MTG. (2 USED)
19	141-2-247T-87100	SHEET, 30X20X0.1MM, LCD REFLECTOR MTG.
	141-6-478T-32600	STICKER, CAUTION REMOVE····, ESCUTCHEON MTG.
	141-2-140T-03900	RATING PLATE, BOTTOM LID MTG. (EUROPE)
	141-2-140T-03903	RATING PLATE, BOTTOM LID MTG. (WEST GERMANY)
	141-6-472T-23100	CAUTION LABEL, CABINET MTG.

FIXING PARTS

Ref. No.	Part No.	Description
Y1	412 004 5705	SPECIAL SCREW, MECHANISM MTG.
Y2	411 021 6603	SCR S-TPG BIN 3X8MM
Y3	411 021 6405	SCR S-TPG BIN 3X8MM
Y4	411 020 9902	SCR S-TPG BRZ + FLG 3X8MM
Y5	411 021 3503	SCR S-TPG BIN 3X10MM
Y6	411 024 3807	SCR S-TPG PAN + FLG 2X8MM
Y7	411 027 3101	SCR S-TPG BIN 3X8MM
Y8	BJESS++3+6+Z1	BINDING + S TITE SCREW, 3X6MM

ELECTRICAL PARTS

Ref. No.	Part No.	Description
55	4-290T-45171	P.C BOARD, POWER TRANSFORMER, PRIMARY
56	⚠ 4-320T-28600	POWER TRANSFORMER
57	⚠ 4-243T-84973	POWER CORD
	123-2-472R-00401	LUG

OPERATION SWITCH P.C.BOARD ASSY

Ref. No.	Part No.	Description
50	141-4-290T-52500	P.C BOARD ASSY, OPERATION SWITCH
S701	4-238T-70873	SWITCH, REPEAT
or	4-238T-90173	SWITCH, REPEAT
S702	4-238T-70873	SWITCH, SEARCH, BACK
or	4-238T-90173	SWITCH, SEARCH, BACK
S703	4-238T-70873	SWITCH, SEARCH, FORWARD
or	4-238T-90173	SWITCH, SEARCH, FORWARD
S704	4-238T-70873	SWITCH, STOP
or	4-238T-90173	SWITCH, STOP
S705	4-238T-70873	SWITCH, MEMORY
or	4-238T-90173	SWITCH, MEMORY
S706	4-238T-70873	SWITCH, PLAY/PAUSE
or	4-238T-90173	SWITCH, PLAY/PAUSE
S707	4-238T-70873	SWITCH, SKIP, FORWARD
or	4-238T-90173	SWITCH, SKIP, FORWARD
S708	4-238T-70873	SWITCH, SKIP, BACK
or	4-238T-90173	SWITCH, SKIP, BACK
S709	4-238T-70873	SWITCH, OPEN/CLOSE
or	4-238T-90173	SWITCH, OPEN/CLOSE
CN6	4-267T-17178	SOCKET, 8P, AMP
D701	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D702	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D703	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133

LCD DISPLAY P.C.BOARD ASSY

Ref. No.	Part No.	Description
51	141-4-290T-52400	P.C BOARD ASSY, LCD
	4-970T-03500	LCD, MULTI FUNCTION LCD DISPLAY
	4-612T-19100	LAMP, LCD
CN7	4-267T-17178	SOCKET, 8P

PARTS LIST

Ref. No.	Part No.	Description
CN8-1	4-267T-17178	SOCKET, 8P
CN8-2	4-267T-17174	SOCKET, 4P
CN9	4-267T-17179	SOCKET, 9P

AMP. P.C.BOARD ASSY

Ref. No.	Part No.	Description
52	141-4-290T-45071	P.C BOARD ASSY, AMP
	4-240T-50371	SOCKET, LINE OUT
	4-240T-30372	SOCKET, SYNCRO REC
	141-2-368T-25000	HEAT SINK
	4-237T-00100	TERMINAL BOARD
T501	4-253T-20700	FILTER, LPF
T502	4-253T-20700	FILTER, LPF
L401	4-253T-15020	FILTER, 100UH
X301	4-266T-01300	CERAMIC RESONATOR, 4.19MHZ
X401	4-266T-01900	CERAMIC RESONATOR, 8.46MHZ
SVR101	4-220T-15184	SEMI-FIXED RESISTOR, 22K OHM
SVR102	4-220T-15188	SEMI-FIXED RESISTOR, 100K OHM
SVR201	4-220T-15184	SEMI-FIXED RESISTOR, 22K OHM
SVR202	4-220T-15184	SEMI-FIXED RESISTOR, 22K OHM
SVR203	4-220T-15178	SEMI-FIXED RESISTOR, 2.2K OHM
	4-236T-10271	PLUG, 4P, TEST POINT (TP1~4)
	4-236T-25171	PLUG, 3P, TEST POINT (TP8~10)
	4-240T-83573	SOCKET, 3P, POWER TRANSFORMER, SECONDARY
CN1	4-236T-25176	PLUG, 8P, PICK-UP, PHOTO DIODE
CN2	4-236T-25174	PLUG, 6P, SENSOR
CN3	4-236T-24474	PLUG, 4P, MOTOR
CN4	4-236T-24475	PLUG, 5P, LOADING MOTOR/SWITCH
CN5	4-236T-24472	PLUG, 2P, LIMIT SWITCH
CN6	4-267T-25178	SOCKET, 8P, KEY CONTROL SWITCH
CN7	4-267T-25178	SOCKET, 8P, LCD
CN8	4-267T-25182	SOCKET, 12P, LCD
CN9	4-267T-25179	SOCKET, 9P, LCD
RA301	4-221T-10494	RESISTOR, 100K OHMX4
IC101	409 108 5502	IC CXA1081M
IC201	409 108 5601	IC CXA1082AQ
IC301	410 023 6406	IC CXP5086H-004S
IC401	409 108 5700	IC CXD1130Q
IC402	409 004 5903	IC CXK5816M-15L
or	409 020 6205	IC LC3517AM-15
or	409 051 9909	IC TC5516AFL-2(T)
IC501	409 067 0709	IC LC7880
IC502	409 018 4503	IC LA6458DS
IC503	409 018 4503	IC LA6458DS
or	409 039 7705	IC NJM4558DD
IC601	409 026 8500	IC L78M05
IC602	409 077 5305	IC L79M05
IC691	409 085 1900	IC LB1645N
Q101	405 019 3705	TR 2SC536-G-AUD-SPA
Q201	405 023 5009	TR 2SD400-E-MP
Q202	405 007 2901	TR 2SB544-E-MP
Q203	405 023 5009	TR 2SD400-E-MP
Q204	405 007 2901	TR 2SB544-E-MP
Q205	405 023 5009	TR 2SD400-E-MP
Q206	405 007 2901	TR 2SB544-E-MP
Q207	405 023 5009	TR 2SD400-E-MP
Q208	405 007 2901	TR 2SB544-E-MP
Q351	405 019 3705	TR 2SC536-G-AUD-SPA
Q352	405 019 3705	TR 2SC536-G-AUD-SPA
Q353	405 019 3705	TR 2SC536-G-AUD-SPA
or	405 019 3705	TR 2SC536-G-AUD-SPA
Q501	405 019 3705	TR 2SC536-G-AUD-SPA
Q503	405 033 6805	TR 2SD1468S-S
or	405 021 0600	TR 2SD1012-G-SPA
Q504	405 033 6805	TR 2SD1468S-S
Q504	405 021 0600	TR 2SD1012-G-SPA
Q505	405 033 6805	TR 2SD1468S-S
or	405 021 0600	TR 2SD1012-G-SPA
Q506	405 033 6805	TR 2SD1468S-S
or	405 021 0600	TR 2SD1012-G-SPA
Q551	405 004 4601	TR 2SA608-F-SPA
Q552	405 004 4601	TR 2SA608-F-SPA
Q561	405 019 3705	TR 2SC536-G-AUD-SPA
Q571	405 004 4601	TR 2SA608-F-SPA
Q681	405 024 4100	TR 2SD612-E
D301	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D302	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D503	407 012 4406	DIODE 1SS133
D561	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D562	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D563	407 012 4406	DIODE 1SS133
or	407 007 9904	DIODE GMA01
D571	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D572	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D573	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D574	407 007 9904	DIODE GMA01
or	407 012 4406	DIODE 1SS133
D575	407 051 6904	ZENER DIODE GZS5.6Y
or	407 053 6704	ZENER DIODE MTZ5.6B
D601	407 004 9105	DIODE DSF10C
or	407 012 3300	DIODE 1SR35-200A
D602	407 004 9105	DIODE DSF10L
or	407 012 3300	DIODE 1SR35-200A
D603	407 004 9105	DIODE DSF10C
or	407 012 330	DIODE 1SR35-200A
D604	407 004 9105	DIODE DSF10C
or	407 012 3300	DIODE 1SR35-200A
D681	407 051 4108	ZENER DIODE GZS11Y
or	407 053 2904	ZENER DIODE MTZ11B
D691	407 051 6904	ZENER DIODE GZS5.6Y
or	407 053 6704	ZENER DIODE MTZ5.6B
C101	403 041 9009	ELECT 10U M 16V
C102	403 003 9405	CERAMIC 4700P K 25V
C105	403 003 6701	CERAMIC 0.033U K 25V
C106	403 003 6701	CERAMIC 0.033U K 25V
C107	403 002 1905	CERAMIC 0.01U K 25V
C108	403 048 6506	ELECT 0.47U M 50V
C109	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
C111	403 040 7709	ELECT 33U M 10V
C112	403 040 7709	ELECT 33U M 10V
C202	403 003 6701	CERAMIC 0.033U K 25V
C203	403 050 6808	ELECT 3.3U M 50V
C204	403 003 2802	CERAMIC 0.022U K 25V
C206	403 003 6701	CERAMIC 0.033U K 25V
C207	403 047 3407	ELECT 47U M 25V
C208	403 051 0805	ELECT 4.7U M 50V
C209	403 070 8608	CERAMIC 1500P K 50V
C211	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
C212	403 048 2102	ELECT 0.22U M 50V
C213	403 040 1905	ELECT 22U M 10V
C214	403 048 6506	ELECT 0.47U M 50V
C215	403 003 6701	CERAMIC 0.033U K 25V
C216	CC+50473ZRZFF	CERAMIC 0.047U Z 50V
C221	403 048 2102	ELECT 0.22U M 50V
C222	403 074 9007	CERAMIC 680P K 50V
C223	403 002 3602	CERAMIC 0.1U K 25V
C224	403 071 7501	CERAMIC 2200P K 50V
C225	403 069 0705	CERAMIC 1000P K 50V
C226	403 067 6709	MT-COMPO 0.22U J 50V
C227	403 069 0705	CERAMIC 1000P K 50V
C228	403 067 6709	MT-COMPO 0.22U J 50V
C301	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF

PARTS LIST

Ref. No.	Part No.	Description
C302	CC+50330KRSLF	CERAMIC 33P 50V K R SL
C303	CC+50330KRSLF	CERAMIC 33P 50V K R SL
C304	403 009 8105	CERAMIC 100P K 50V
C305	403 009 8105	CERAMIC 100P K 50V
C306	403 009 8105	CERAMIC 100P K 50V
C307	403 009 8105	CERAMIC 100P K 50V
C308	403 039 6904	ELECT 100U M 10V
C309	CC+50473ZRZFF	CERAMIC 0.047U Z 50V
C355	CC+50223ZRZFF	CERAMIC 0.022U 50V Z R ZF
C401	403 040 7709	ELECT 33U M 10V
C402	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
C403	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
C404	403 069 0705	CERAMIC 1000P K 50V
C405	403 023 9607	CERAMIC 39P J 50V
C406	403 023 9607	CERAMIC 39P J 50V
C407	403 040 4005	ELECT 220U M 10V
C501	403 039 6904	ELECT 100U M 10V
C502	403 039 6904	ELECT 100U M 10V
C503	403 050 0004	ELECT 2.2U M 50V
C504	403 040 1905	ELECT 22U M 10V
C507	403 041 9009	ELECT 10U M 16V
C508	403 041 9009	ELECT 10U M 16V
C509	403 061 2202	POLYESTER 3900P K 50V
C510	403 061 2202	POLYESTER 3900P K 50V
C511	CC+50473ZRZFF	CERAMIC 0.047U Z 50V
C512	403 069 0705	CERAMIC 1000P K 50V
C521	403 063 2101	POLYESTER 0.068U K 50V
C522	403 063 2101	POLYESTER 0.068U K 50V
C523	403 047 0109	ELECT 4.7U M 25V
C524	403 047 0109	ELECT 4.7U M 25V
C525	403 056 7908	POLYESTER 1000P K 50V
C526	403 056 7908	POLYESTER 1000P K 50V
C527	CC+50473ZRZFF	CERAMIC 0.047U Z 50V
C528	CC+50473ZRZFF	CERAMIC 0.047U Z 50V
C529	CC+50473ZRZFF	CERAMIC 0.047U Z 50V
C561	403 047 0109	ELECT 4.7U M 25V
C562	403 050 0004	ELECT 2.2U M 50V
C563	403 048 6506	ELECT 0.47U M 50V
C571	403 039 6904	ELECT 100U M 10V
C601	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
C602	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
C603	403 043 7706	ELECT 3300U M 16V
C604	403 043 7706	ELECT 3300U M 16V
C605	403 039 6904	ELECT 100U M 10V
C606	403 039 6904	ELECT 100U M 10V
C681	403 050 0004	ELECT 2.2U M 50V
C691	CB+25104MR++F	BC CON 0.1U 25V M R
C692	CC+50103ZRZFF	CERAMIC 0.01U 50V Z R ZF
R101	401 024 7004	CARBON 1K JA 1/6W
R102	401 027 8602	CARBON 8.2K JA 1/6W
R103	401 027 5502	CARBON 6.8K JA 1/6W
R105	401 025 8208	CARBON 22K JA 1/6W
R106	401 012 8105	CARBON 100K JA 1/4W
R107	401 024 7400	CARBON 10K JA 1/6W
R108	401 025 4606	CARBON 18K JA 1/6W
R109	401 025 7805	CARBON 2.2K JA 1/6W
R110	401 027 0507	CARBON 470K JA 1/6W
R111	401 024 7400	CARBON 10K JA 1/6W
R112	401 024 7400	CARBON 10K JA 1/6W
R113	401 026 4605	CARBON 33K JA 1/6W
R114	401 024 9305	CARBON 1.2K JA 1/6W
R115	401 024 9305	CARBON 1.2K JA 1/6W
R116	401 024 9305	CARBON 1.2K JA 1/6W
R201	401 026 0607	CARBON 270 JA 1/6W
R202	401 027 9005	CARBON 82K JA 1/6W
R203	401 026 0607	CARBON 270 JA 1/6W
R204	401 025 8703	CARBON 220K JA 1/6W
R205	401 027 9005	CARBON 82K JA 1/6W
R206	401 026 9907	CARBON 4.7K JA 1/6W
R207	401 027 0507	CARBON 470K JA 1/6W
R208	401 024 9701	CARBON 12K JA 1/6W

Ref. No.	Part No.	Description
R209	401 024 7707	CARBON 100K JA 1/6W
R211	401 027 0507	CARBON 470K JA 1/6W
R212	401 024 7400	CARBON 10K JA 1/6W
R213	401 025 4903	CARBON 180K JA 1/6W
R214	401 026 4308	CARBON 3.3K JA 1/6W
R215	401 025 8208	CARBON 22K JA 1/6W
R216	401 024 8001	CARBON 1M JA 1/6W
R217	401 026 0607	CARBON 270 JA 1/6W
R218	401 026 0607	CARBON 270 JA 1/6W
R219	401 025 0004	CARBON 120K JA 1/6W
R221	401 026 8108	CARBON 4.7 JA 1/6W
R222	401 026 8108	CARBON 4.7 JA 1/6W
R223	401 024 7707	CARBON 100K JA 1/6W
R224	401 012 8105	CARBON 100K JA 1/4W
R225	401 026 4605	CARBON 33K JA 1/6W
R226	401 025 1902	CARBON 15K JA 1/6W
R228	401 026 4605	CARBON 33K JA 1/6W
R229	401 027 0309	CARBON 47K JA 1/6W
R231	401 019 5909	CARBON 4.7 JB 1/4W
R232	401 019 5909	CARBON 4.7 JB 1/4W
R233	401 019 5909	CARBON 4.7 JB 1/4W
R234	401 019 5909	CARBON 4.7 JB 1/4W
R235	401 019 5909	CARBON 4.7 JB 1/4W
R236	401 019 5909	CARBON 4.7 JB 1/4W
R301	401 025 8208	CARBON 22K JA 1/6W
R302	401 025 8208	CARBON 22K JA 1/6W
R303	401 025 8208	CARBON 22K JA 1/6W
R306	401 024 7400	CARBON 10K JA 1/6W
R307	401 024 7400	CARBON 10K JA 1/6W
R351	401 024 7400	CARBON 10K JA 1/6W
R355	401 024 7400	CARBON 10K JA 1/6W
R359	401 024 7004	CARBON 1K JA 1/6W
R401	401 024 7707	CARBON 100K JA 1/6W
R402	401 024 8001	CARBON 1M JA 1/6W
R501	401 026 4605	CARBON 33K JA 1/6W
R503	401 024 9701	CARBON 12K JA 1/6W
R504	401 024 9701	CARBON 12K JA 1/6W
R505	401 025 4200	CARBON 1.8K JA 1/6W
R506	401 025 4200	CARBON 1.8K JA 1/6W
R515	401 026 9907	CARBON 4.7K JA 1/6W
R516	401 026 9907	CARBON 4.7K JA 1/6W
R517	401 025 8208	CARBON 22K JA 1/6W
R518	401 025 8208	CARBON 22K JA 1/6W
R519	401 024 7400	CARBON 10K JA 1/6W
R520	401 024 7400	CARBON 10K JA 1/6W
R523	401 027 2303	CARBON 560 JA 1/6W
R524	401 027 2303	CARBON 560 JA 1/6W
R525	401 025 7409	CARBON 220 JA 1/6W
R526	401 025 7409	CARBON 220 JA 1/6W
R527	401 024 7707	CARBON 100K JA 1/6W
R528	401 024 7707	CARBON 100K JA 1/6W
R529	401 026 9600	CARBON 470 JA 1/6W
R530	401 026 9600	CARBON 470 JA 1/6W
R531	401 026 9907	CARBON 4.7K JA 1/6W
R532	401 026 9907	CARBON 4.7K JA 1/6W
R533	401 027 0507	CARBON 470K JA 1/6W
R534	401 027 0507	CARBON 470K JA 1/6W
R535	401 026 9907	CARBON 4.7K JA 1/6W
R536	401 026 9907	CARBON 4.7K JA 1/6W
R551	401 026 4605	CARBON 33K JA 1/6W
R552	401 026 4605	CARBON 33K JA 1/6W
R553	401 024 7004	CARBON 1K JA 1/6W
R554	401 024 7004	CARBON 1K JA 1/6W
R561	401 024 7004	CARBON 1K JA 1/6W
R562	401 025 7805	CARBON 2.2K JA 1/6W
R563	401 027 2600	CARBON 5.6K JA 1/6W
R564	401 024 7707	CARBON 100K JA 1/6W
R565	401 024 7400	CARBON 10K JA 1/6W
R566	401 024 7004	CARBON 1K JA 1/6W
R571	401 024 7707	CARBON 100K JA 1/6W
R572	401 024 7004	CARBON 1K JA 1/6W
R573	401 024 7400	CARBON 10K JA 1/6W
R574	401 024 7004	CARBON 1K JA 1/6W
R575	401 026 0607	CARBON 270 JA 1/6W

PARTS LIST

Ref. No.	Part No.	Description
R681	401 012 3001	CARBON 10 JB 1/4W
R682	401 024 7004	CARBON 1K JA 1/6W
R691	402 023 2502	FUSIBLE RES 10 G- 1/4W

POWER TRANSFORMER, SECONDARY P.C.BOARD ASSY

Ref. No.	Part No.	Description
53	141-4-290T-45271	P.C BOARD ASSY, POWER TRANSFORMER, SECONDARY
	123-2-472R-00401	LUG
CN	4-240T-83573	SOCKET, 3P
C607	CC+50473ZRZFF	CERAMIC 0.047U Z 50V

POWER SWITCH P.C.BOARD ASSY

Ref. No.	Part No.	Description
54	141-4-290T-45371	P.C BOARD ASSY, POWER SWITCH
	141-2-382T-18900	TERMINAL
	4-237T-00100	TERMINAL BOARD
S901	⚠ 4-238T-70480	SWITCH, POWER
C901	⚠ 4-223T-12100	CAPACITOR, 0.01U 400V
or	⚠ 4-223T-12280	CAPACITOR, 0.01
or	⚠ 4-223T-12290	CAPACITOR, 0.01

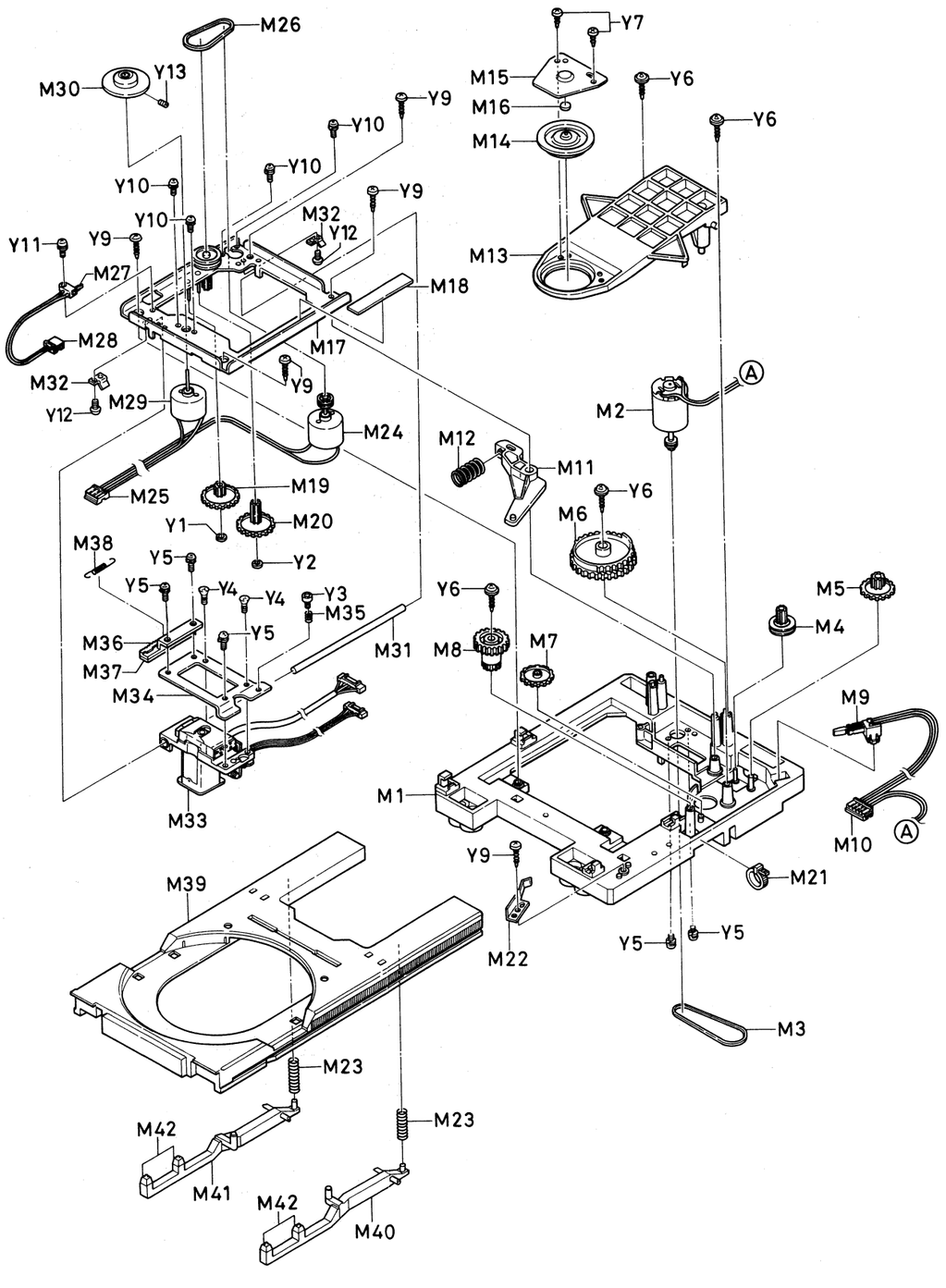
MECHANISM (PM-DADS21)

Ref. No.	Part No.	Description
	141-2-447T-00804	CUSHION, 5X15MM, DISC TRAY
M1	141-2-311T-56100	CHASSIS, LOADING
M2	4-527T-31302	COMMUTATE MOTOR ASSY, LOADING
M3	141-2-564T-44000	SQUARE BELT, LOADING MOTOR
M4	141-2-581T-38300	GEAR, PULLEY/GEAR RELAY
M5	141-2-581T-52600	GEAR, CAM GEAR RELAY
M6	141-2-581T-52700	GEAR, CAM
M7	141-2-581T-47600	GEAR, DISC TRAY RELAY
M8	141-2-581T-47700	GEAR, DISC TRAY
M9	4-238T-94471	SWITCH, LOADING (S802)
M10	4-267T-56000	SOCKET, LOADING SWITCH
M11	141-2-740T-59900	LEVER, CHUCK LEVER, RELAY
M12	141-2-856T-76200	SPRING COIL, LEVER RETURN
M13	141-2-740T-45100	LEVER, CHUCKING
M14	141-2-661T-48400	PULLEY, CHUCKING
M15	141-2-290T-19900	BRACKET, CHUCKING PULLEY
M16	141-2-247T-57400	SHEET, CHUCKING PULLEY
M17	141-9-311T-56000	CHASSIS ASSY, BASE MECHANISM
M18	141-2-247T-45200	SHEET, CHASSIS ASSY
M19	141-2-581T-52500	GEAR, PICK-UP MOVING
M20	141-2-581T-41300	GEAR, PICK-UP MOVING, RELAY
M21	141-2-464T-43100	FIXER, LEAD MTG.
M22	141-2-853T-89600	SPRING PLATE, TRAY SLIDE
M23	141-2-856T-63000	SPRING COIL, DISC UP/DOWN LEVER
M24	4-527T-33701	COMMUTATE MOTOR ASSY, PICK-UP
M25	4-267T-55900	SOCKET, PICK-UP/SPINDLE MOTOR
M26	141-2-564T-44100	SQUARE BELT, PICK-UP MOVING
M27	4-248T-36300	SWITCH, LIMIT (S803)
M28	4-267T-55800	SOCKET, LIMIT SWITCH
M29	4-527T-33600	COMMUTATE MOTOR, SPINDLE
M30	141-2-118T-04500	TURN TABLE
M31	141-2-754T-99900	SHAFT, PICK-UP
M32	141-2-853T-97200	SPRING PLATE, PICK-UP
M33	⚠ 4-180T-01000	PICK UP
M34	141-2-290T-29100	BRACKET, PICK-UP MTG.
M35	141-2-856T-76100	SPRING COIL, SKEW ADJUSTMENT
M36	141-2-581T-52300	GEAR, PICK-UP MOVING, UPPER
M37	141-2-581T-52400	GEAR, PICK-UP MOVIHG, LOWER
M38	141-2-856T-76300	SPRING COIL, PICK-UP
M39	141-2-732T-42700	SLIDE, TRAY
M40	141-2-740T-44700	LEVER, DISC UP/DOWN, RIGHT
M41	141-2-740T-44800	LEVER, DISC UP/DOWN, LEFT
M42	141-2-445T-34500	RUBBER CUSHION, DISC UP/DOWM LEVER

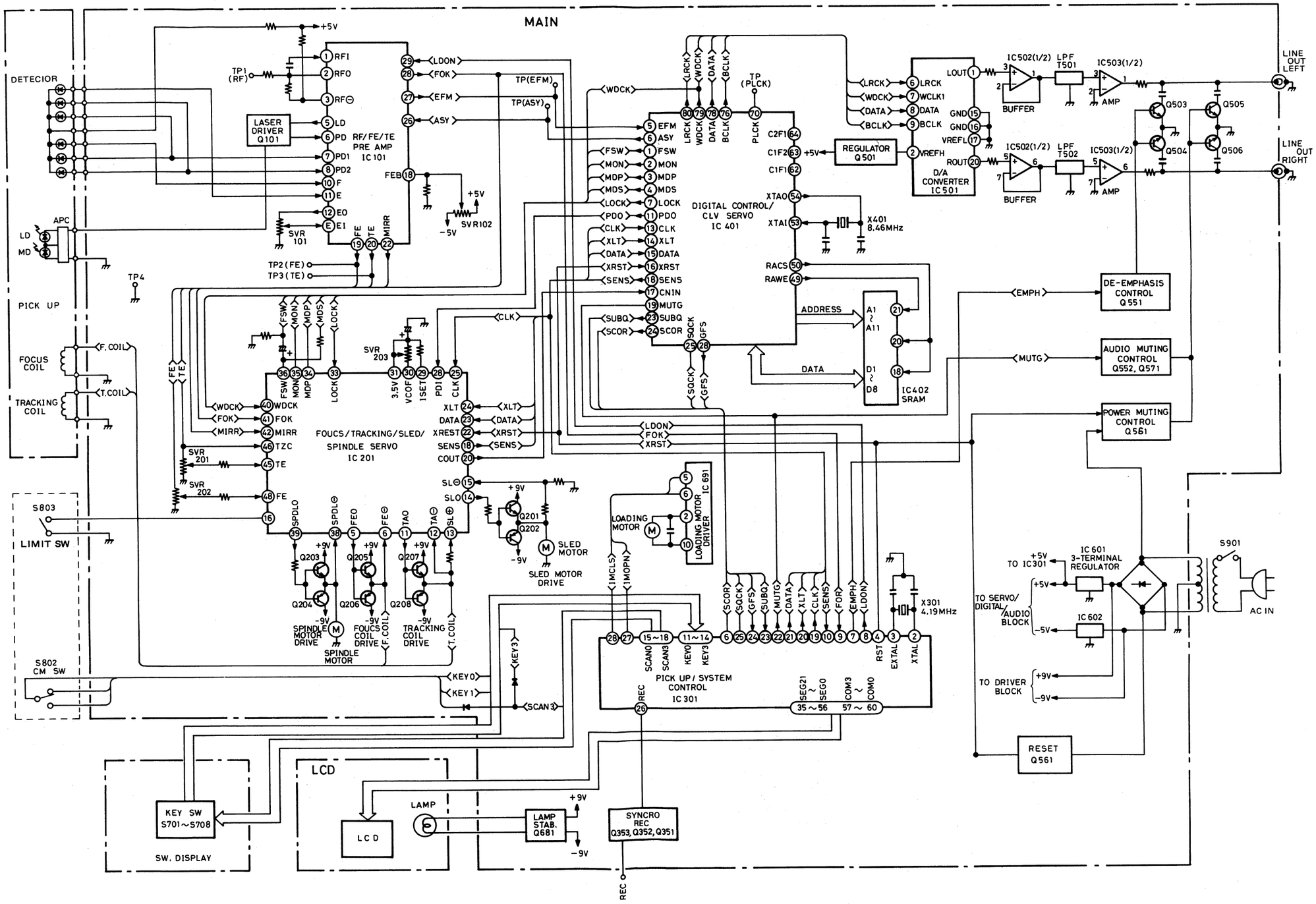
FIXING PARTS (MECHANISM)

Ref. No.	Part No.	Description
Y1	412 013 0609	SPECIAL WASHER, 1.6X3.2X0.25MM, GNW
Y2	141-2-453T-09800	WASHER, 2.6X6X0.5MM, GNW
Y3	141-2-421T-70500	SPECIAL SCREW, SKEW ADJUSTMENT
Y4	411 033 9906	SCR FLT 2.6X6MM
Y5	411 045 1202	SCR PAN + SW 2.6X5MM
Y6	411 020 9902	SCR S-TPG BRZ + FLG 3X8MM
Y7	411 021 2407	SCR S-TPG BIN 2.6X4MM
Y9	411 021 6405	SCR S-TPG BIN 3X8MM
Y10	411 044 7007	SCR PAN + SW 2X3MM
Y11	411 044 7700	SCR PAN + SW 2X6MM
Y12	411 039 0105	SCR PAN 2X3MM
Y13	411 063 1109	SCR SET HEX-SCT 2X6MM

MECHANISM EXPLODED VIEW

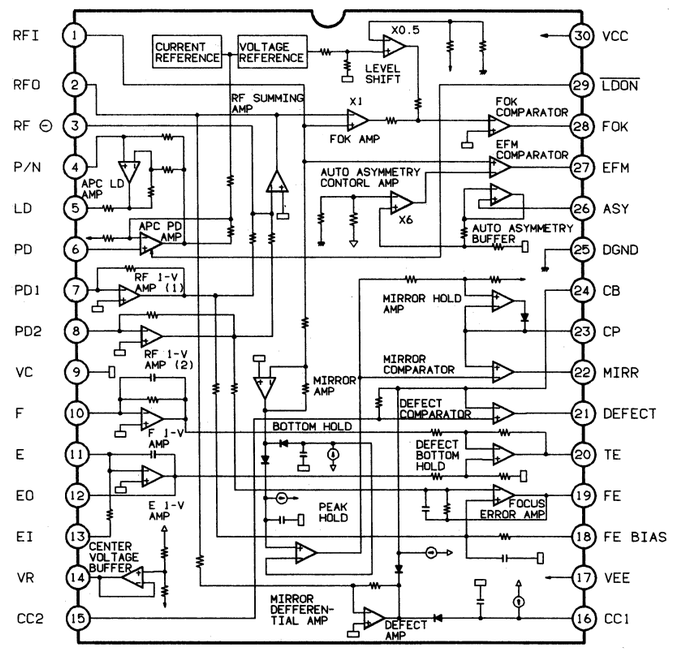


BLOCK DIAGRAM (2)



IC BLOCK DIAGRAM

IC101 CXA1081M (RF Amplifier for CD Player)



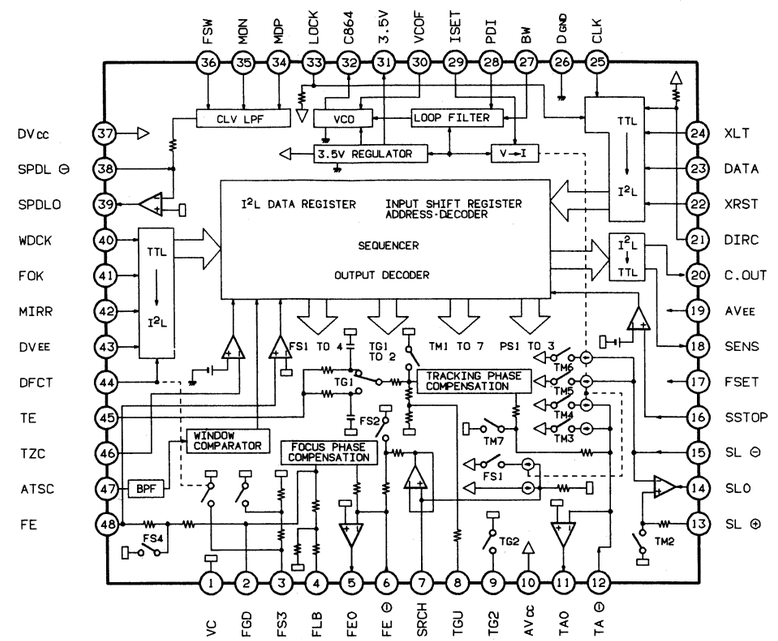
Pins Functions of IC101 (CXA1081M) ····· V_{CC} = 2.5V, V_{EE} = D_{GND} = –2.5V, VC = GND

Pin No.	Pin name (Symbol)	I/O	Description
1	RFI	I	Input pin with coupling capacitor where the RF summing amplifier output is connected.
2	RFO	O	Output pin of RF summing amplifier and check point of the eye pattern.
3	RF⊖	I	Feedback input pin of the RF summing amplifier.
4	P/N	I	Switching pin of the LD P-sub/N-sub. (DC voltage: At N-sub)
5	LD	O	Output pin of the APC LD amplifier. DC voltage: At N-sub and pin 6 open.
6	PD	I	Input pin of the APC PD amplifier. (DC voltage: Open)
7	PD1	I	Inversion input pin of the RF I-V amplifier (1); with the pin photo diode of A and C connected.
8	PD2	I	Inversion input pin of the RF I-V amplifier (2); with the pin photo diode of B and D connected.
9	VC	–	For split power supply: GND For single power supply: VR (pin 14)
10	F	I	Inversion input pin of the F I-V amplifier; with the pin photo diode of F connected.
11	E	I	Inversion input pin of the E I-V amplifier; with the pin photo diode of E connected.
12	EO	O	Output pin of the E I-V amplifier.
13	EI	I	Feedback input pin of the E I-V amplifier. For gain adjustment of the E I-V amplifier.
14	VR	O	Output pin of (VCC + VEE)/2 DC voltage

Pin No.	Pin name (Symbol)	I/O	Description
15	CC2	I	Input pin (with coupling capacitor) where the Defect bottom-hold output is connecting.
16	CC1	O	Output pin of the Defect bottom hold.
17	VEE	–	For split power supply: Negative power supply. For single power supply: GND
18	FE BIAS	I	Feedback input pin of the focus error amplifier. For CMR (Common Mode Rejection) adjustment of the focus error amplifier.
19	FE	O	Output pin of the focus error amplifier.
20	TE	O	Output pin of the tracking error amplifier.
21	DEFECT	O	Output pin of the defect comparator (DC voltage: at 10 kΩ load).
22	MIRR	O	Output pin of the MIRR comparator (DC voltage: at 10 kΩ load).
23	CP	I	Feedback input pin of the MIRR comparator.
24	CB	I	Connection pin of the Defect bottom-hold capacitor.
25	DGND	–	For split power supply: GND For single power supply: GND (VEE).
26	ASY	I	Input pin of the auto asymmetry control amplifier.
27	EFM	O	Output pin of the EFM comparator (DC voltage: at 10 kΩ load).
28	FOK	O	Output pin of the FOK comparator (DC voltage: at 10 kΩ load).
29	LD ON	I	Switching pin of the LD ON/OFF. (DC voltage: For LD on) (DGND)
30	VCC	–	Positive power supply.

IC BLOCK DIAGRAM

IC201 CXA1082AQ (Servo Signal Processor for CD Player)



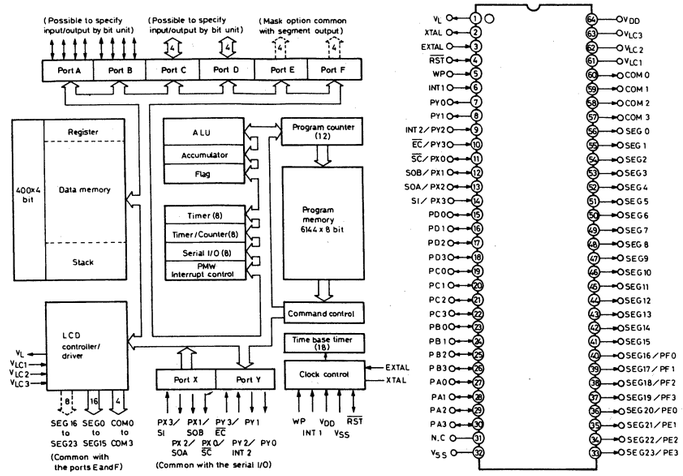
Pins Functions of IC201 (CXA1082AQ)

Pin No.	Pin name (Symbol)	Description
2	FGD	Connect a capacitor between this pin and pin 3 to reduce the high-frequency gain.
3	FS3	The high-frequency gain of the focus servo can be changed by switching FS3 ON or OFF.
4	FLB	Time constant external pin for rising low band-width of the focus servo.
5	FEO	OP amplifier output pins for the power Transister driver.
6	FE⊖	Reverse input pin for the focus amplifier.
7	SRCH	Pin for providing a time constant to generate the focus search waveform.
8	TGU	Pin for providing a time constant to switch the tracking gain of high-frequency.
9	TG2	Pin for providing a time constant to change the high-frequency tracking gain.
11	TAO	OP amplifier output pins for the power Transister driver.
12	TA⊖	Reverse input pin for the tracking amplifier.
13	SL⊕	Non-reverse input pin for the sled amplifier.
14	SLO	OP amplifier output pins for the power Transister driver.
15	SL⊖	Reverse input pin for the sled amplifier.
16	SSTOP	Pin for detecting a signal for the ON/OFF limit switch of the innermost part of the disc.
17	FSET	Pin for setting the peak frequency of the focus, tracking phase compensation and f0 of the CLV LPF.
18	SENS	Output pins for interfacing with the micro-computer.
20	C.OUT	Output pins for interfacing with the micro-computer.
21	DIRCT	Input pins for interfacing with the microcomputer.
22	XRST	Input pins for interfacing with the microcomputer.

Pin No.	Pin name (Symbol)	Description
23	DATA	Input pins for interfacing with the microcomputer.
24	XLT	Input pins for interfacing with the microcomputer.
25	CLK	Input pins for interfacing with the microcomputer.
27	BW	Pin for providing a time constant for the loop filter.
28	PDI	Input pin for the CX23035/CXD1130 phase comparator output PDO.
29	ISET	Current is input, determining the peaks of focus search, track jump, and sled kick.
30	VCOF	The free-running frequency of VCO is almost proportional to the resistance Value between this pin and pin 31.
32	C864	Output pin of 8.64 MHz VCO.
33	LOCK	Input pins for interfacing with the microcomputer.
34	MDP	Pin for connecting the CX23035/CXD1130 MDP pin.
35	MON	Pin for connecting the CX23035/CXD1130 MON pin.
36	FSW	Pin for providing an external LPF time constant of the CLV servo error signal.
38	SPDL⊖	Reverse input pin for the spindle drive amplifier.
39	SPDLO	OP amplifier output pins for the power Transister driver.
40	WDCK	Input pins for interfacing with the microcomputer.
41	FOK	Input pins for interfacing with the microcomputer.
42	MIRR	Input pins for interfacing with the microcomputer.
44	DFCT	Input pins for interfacing with the microcomputer.
45	TE	Input pin for tracking error signals.
46	TZC	Input pin for the zero-cross tracking comparator.
47	ATSC	Input pin of the window comparator for ATSC detection.
48	FE	Input pin for focus error signals.

IC BLOCK DIAGRAM

IC301 CXP5086H-004S (4-bit 1-chip Micro-processor)

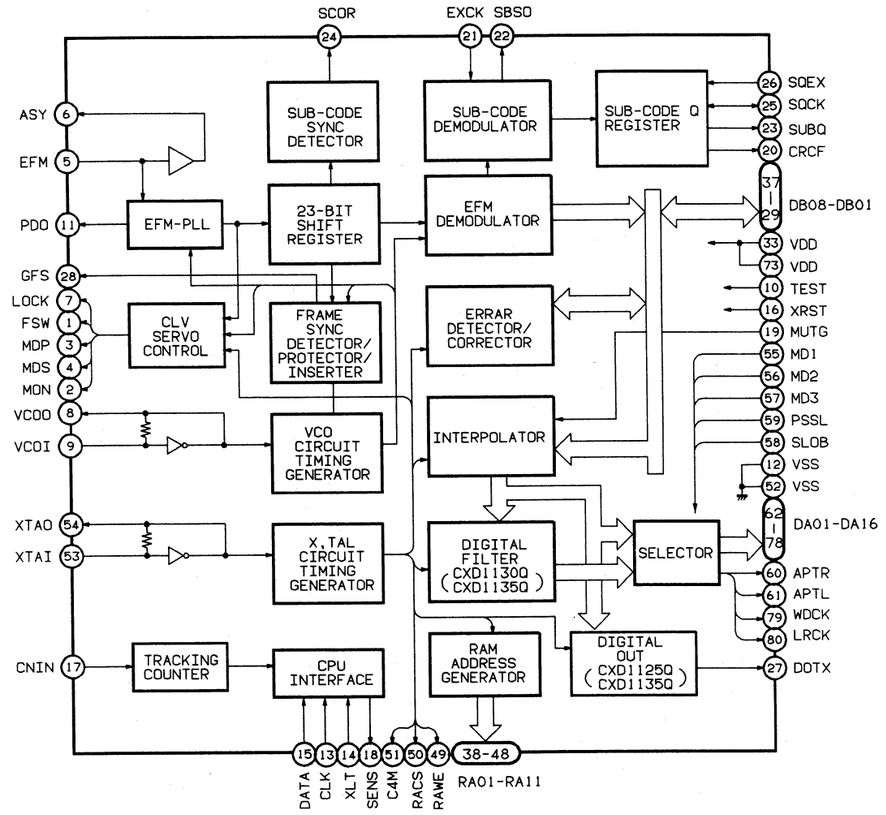


Pins Functions of IC301 (CXP5086H–004S)

Pin No.	Pin name (Symbol)	I/O	Function Name	Allocated Function
1	VL	O	VL	
2	XTAL	O	XTAL	Output of oscillator circuit
3	EXTAL	I	EXTAL	Input of oscillator circuit
4	RST	I	RESET	Reset [Initialize signal]
5	WP	I	WP	Wake up signal input [Wake up signal]
6	INT1	I	SCOR	SCOR signal input (PIN 24 of IC401) [Interruption]
7	PY0	O	EMPHA	Emphasis
8	PY1	O	LDON	Laser diode "ON" signal
9	PY2	I	FOK	Focus Ok signal (PIN 28 of IC101)
10	PY3	I	SENS	SENS signal (PIN 18 of IC201, PIN 18 of IC401)
11	PX0	I	KEY0	KEY input port
12	PX1	I	KEY1	KEY input port
13	PX2	I	KEY2	KEY input port
14	PX3	I	KEY3	KEY input port
15	PD0	O	SCAN0	SCAN output port
16	PD1	O	SCAN1	SCAN output port
17	PD2	O	SCAN2	SCAN output port
18	PD3	O	SCAN3	SCAN output port
19	PC0	O	CLK	Clock (PIN 25 of IC201, PIN 13 of IC401)
20	PC1	O	XLT	Latch Signal (PIN 24 of IC201, PIN 14 of IC401)
21	PC2	O	DATA	Data signal (PIN 23 of IC201, PIN 15 of IC401)
22	PC3	O	MUTING	Muting
23	PB0	I	SUBQ	Sub Q data input port (PIN 23 of IC401)
24	PB1	I	GFS	GFS signal input port (PIN 28 of IC401)
25	PB2	O	SQCK	Sub Q Read clock (PIN 25 of IC401)
26	PB3	O	REC	SYNCRO REC output
27	PA0	O	LMOPN	Signal to open disc tray
28	PA1	O	LMCLS	Signal to close disc tray
29	PA2	I	RDATA	Remote control data signal input
30	PA3	O	RCLK	Clock for Remote control data signal
31	NC	–	–	[No Connection]
32	VSS	–	VSS	Power supply (ground) [0 (V)]
33	PE3/ SEG23	O	–	–
34	PE2/ SEG22	O	SEG22	SEGMENT output (OVER)
35	PE1/ SEG21	O	SEG21	SEGMENT output (TRACK, INDEX, MIN, SEC, ...)
36	PE0/ SEG20	O	SEG20	SEGMENT output (–, PLAY, REPEAT, PROG)
37	PF3/ SEG19	O	SEG19	SEGMENT output (TRACK-H)
38	PF2/ SEG18	O	SEG18	SEGMENT output (TRACK-H)
39	PF1/ SEG17	O	SEG17	SEGMENT output (TRACK-L)
40	PF0/ SEG16	O	SEG16	SEGMENT output (TRACK-L)
41	SEG15	O	SEG15	SEGMENT output (INDEX-H)
42	SEG14	O	SEG14	SEGMENT output (INDEX-H)
43	SEG13	O	SEG13	SEGMENT output (INDEX-L)
44	SEG12	O	SEG12	SEGMENT output (INDEX-L)
45	SEG11	O	SEG11	SEGMENT output (MIN-H)
46	SEG10	O	SEG10	SEGMENT output (MIN-H)
47	SEG9	O	SEG9	SEGMENT output (MIN-L)
48	SEG8	O	SEG8	SEGMENT output (MIN-L)
49	SEG7	O	SEG7	SEGMENT output (SEC-H)
50	SEG6	O	SEG6	SEGMENT output(SEC-H)
51	SEG5	O	SEG5	SEGMENT output (SEC-L)
52	SEG4	O	SEG4	SEGMENT output (SEC-L)
53	SEG3	O	SEG3	SEGMENT output (1, 5, 9, 13)
54	SEG2	O	SEG2	SEGMENT output (2, 6, 10, 14)
55	SEG1	O	SEG1	SEGMENT output (3, 7, 11, 15)
56	SEG0	O	SEG0	SEGMENT output (4, 8, 12, 16)
57	COM3	O	COM3	COMMON
58	COM2	O	COM2	COMMON
59	COM1	O	COM1	COMMON
60	COM0	O	COM0	COMMON
61	VLC1	O	VLC1	LCD Bias Voltage input
62	VLC2	O	VLC2	LCD Bias voltage input
63	VLC3	O	VLC3	LCD Bias voltage input
64	VDD	–	VDD	Power supply (+5V)

IC BLOCK DIAGRAM

IC401 CXD1130Q (CD Digital Signal Processor)



Note:
- **C1F1·C1F2:** Monitor output reporting status of error correction for C1 decoder.
- **C2F1·C2F2:** Monitor output reporting status of error correction for C1 decoder.
- **C2FL:** Output of status condition. C2FL is set "H" when the C2 sequence presently being corrected becomes impossible to correct.
- **C2PO:** Display output of the C2 pointer. It is synchronized with the audio data output.
- **RFCK:** Read frame clock output. 7.35 kHz of the crystal system.
- **WFCK:** Write frame clock output. 7.35 kHz when locked by the crystal system.
- **PLCK:** Output VCO/2. f = 4.3218 MHz when locked by the EFM signal.
- **UGFS:** Output for unprotected frame sync patterns.
- **GTOP:** Output for display of status of frame sync protection.
- **RAOV:** Output for display of either RAM overflow or underflow for ±4 frame jitter absorption.
- **C4LR:** Strobe signal. 352.8 kHz when DF is on, 176.4 kHz when DF is off, or when the LS1 is CXD1125Q.
- **C21O:** Inverse output of C21O.
- **C21O:** Bit clock output. 4.2336 MHz when DF is on, 2.1168 MHz when DF is off, or when the LS1 is CXD1125Q.
- **DATA:** Serial data output of audio signal.

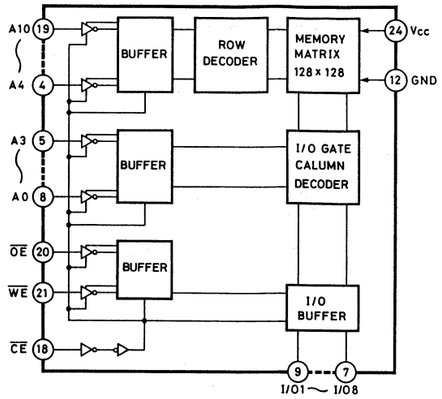
IC BLOCK DIAGRAM

Pins Functions of IC401 (CXD1130Q)

Pin No.	Pin name (Symbol)	I/O	Description
1	FSW	O	Pin 1 output is switched constant when output filter of the spindle motor is energized.
2	MON	O	ON/OFF control for spindle motor.
3	MDP	O	Spindle motor drive. Provides rough control during CLV-S mode and phase control during CLV-P mode.
4	MDS	O	Spindle motor drive. Controls speed during CLV-P mode.
5	EFM	I	EFM signal from RF amplifier.
6	ASY	O	Controls slice level of the EFM signal. The output of pin 7 reflects the status of the GFS signal which is sampled at WFCK/16.
7	LOCK	O	When the GFS signal is "H", the output of pin 7 is also "H", but, when the signal has remained "L" for at least 8 samples, the output of pin 7 is "L".
8	VCOO	O	VCO output. The frequency is f = 8.6436 MHz, when locked by the WFCK signal.
9	VCO1	I	VCO input.
10	TEST	I	(OV)
11	PDO	O	The output of pin 11 provides phase comparison of EFM signal and VCO/2.
12	VSS	–	GND (OV)
13	CLK	I	Pin 13 provides serial transmission clock from the CPU. Data is latched on the leading edge of the clock.
14	XLT	I	Pin 14 provides latch input from the CPU. 8-bit shift register data (serial data received from the CPU) is latched in each of the registers.
15	DATA	I	Serial data from the CPU.
16	XRST	I	System reset ("L").
17	CNIN	I	Tracking pulse input.
18	SENS	O	Output reflecting internal condition as designated by address.
19	MUTG	I	Muting input. MUTG is "L" when ATTM of internal register A is "L" (normal condition). MUTG is "H" when muting condition is set.
20	CRCF	O	Output the results CRC check of subcode Q.
21	EXCK	I	Clock input for subcode serial output.
22	SBSO	O	Serial output of subcode.
23	SUBQ	O	Output of subcode Q.
24	SCOR	O	Output of subcode sync S0+S1.
25	SQCK	I/O	Clock for reading subcode Q.
26	SQEX	I	Input for selecting SQCK.
27	DOTX	O	Digital output (WFCK is output when DO is off or for the CXD1130Q.)
28	GFS	O	Display output for frame sync lock status.
29	DB08	I/O	Data pin for external RAM. DATA8 (MSB)
30	DB07	I/O	Data pin for external RAM. DATA7
31	DB06	I/O	Data pin for external RAM. DATA6
32	DB05	I/O	Data pin for external RAM. DATA5
33	VDD	–	Power supply (+5V)
34	DB04	I/O	Data pin for external RAM. DATA4
35	DB03	I/O	Data pin for external RAM. DATA3
36	DB02	I/O	Data pin for external RAM. DATA2
37	DB01	I/O	Data pin for external RAM. DATA1 (LSB)
38	RA01	O	Output address of external RAM. ADDR01 (LSB)
39	RA02	O	Output address of external RAM. ADDR02
40	RA03	O	Output address of external RAM. ADDR03
41	RA04	O	Output address of external RAM. ADDR04
42	RA05	O	Output address of external RAM. ADDR05
43	RA06	O	Output address of external RAM. ADDR06
44	RA07	O	Output address of external RAM. ADDR07
45	RA08	O	Output address of external RAM. ADDR08
46	RA09	O	Output address of external RAM. ADDR09
47	RA10	O	Output address of external RAM. ADDR10
48	RA11	O	Output address of external RAM. ADDR11 (MSB)
49	RAWE	O	Write enable output signal to external RAM. (Active when "L".)
50	RACS	O	Chip select output signal to external RAM. (Active when "L".)
51	C4M	O	Divider output for crystal. f = 4.2336 MHz
52	VSS	–	GND (OV)
53	XTAI	I	Input to crystal oscillator circuit. Depending on the mode the frequency is either f = 8.4672 or 16.9344 MHz.
54	XTAO	O	Output from crystal oscillator circuit. Depending on the mode the frequency is either f = 8.4672 or 16.9344 MHz.
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Code switch input for audio data output. 2's complement output when "L", offset binary output when "H".
59	PSSL	I	Code switch input for audio data output. Serial output when "L", parallel output when "H".
60	APTR	O	Control output for aperture compensation. "H" when R-ch.
61	APTL	O	Control output for aperture compensation. "H" when L-ch.
62	DA01	O	DA01 (LSB of parallel audio data) is output when PSSL = "H". C1F1 is output when PSSL = "L".
63	DA02	O	DA02 is output when PSSL = "H". C1F2 is output when PSSL = "L".
64	DA03	O	DA03 is output when PSSL = "H". C2F1 is output when PSSL = "L".
65	DA04	O	DA04 is output when PSSL = "H". C2F2 is output when PSSL = "L".
66	DA05	O	DA05 is output when PSSL = "H". C2FL is output when PSSL = "L".
67	DA06	O	DA06 is output when PSSL = "H". C2PO is output when PSSL = "L".
68	DA07	O	DA07 is output when PSSL = "H". RFCK is output when PSSL = "L".
69	DA08	O	DA08 is output when PSSL = "H". WFCK is output when PSSL = "L".
70	DA09	O	DA09 is output when PSSL = "H". PLCK is output when PSSL = "L".
71	DA10	O	DA10 is output when PSSL = "H". UGFS is output when PSSL = "L".
72	DA11	O	DA11 is output when PSSL = "H". GTOP is output when PSSL = "L".
73	VDD	–	Power supply (+5V)
74	DA12	O	DA12 is output when PSSL = "H". RAOV is output when PSSL = "L".
75	DA13	O	DA13 is output when PSSL = "H". C4LR is output when PSSL = "L".
76	DA14	O	DA14 is output when PSSL = "H". C21O is output when PSSL = "L".
77	DA15	O	DA15 is output when PSSL = "H". C21O is output when PSSL = "L".
78	DA16	O	DA16 (MSB of paralel audio data) is output when PSSL = "H". DATA is output when PSSL = "L".
79	WDCK	O	Strobe signal output. Output is 176.4 kHz when DF is on. Output is 88.2 kHz when DF is off or when the chip being used is CXD1125Q.
80	LRCK	O	Strobe signal output. Output is 88.2 kHz when DF is on. Output is 44.1 kHz when DF is off or when the chip being used is CXD1125Q.

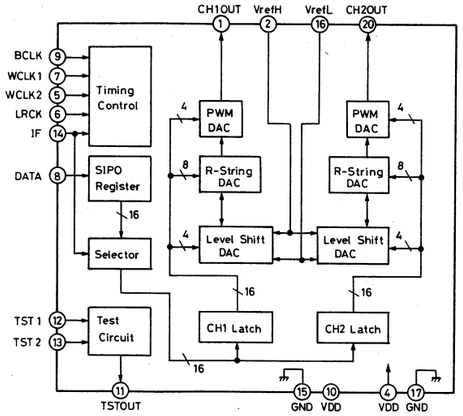
IC BLOCK DIAGRAM

IC402 CXK5816M-15L (Static RAM 2k-word x 8-bit High-Speed C MOS)



TERMINAL NAME	TERMINAL DESCRIPTION
A0 ~ A10	ADDRESS INPUT
I/O1 I/O8	DATA INPUT / OUTPUT
CE	CHIP ENABLE INPUT
WE	WRITE ENABLE INPUT
OE	OUTPUT ENABLE INPUT
Vcc	+5V POWER SOURCE
GND	GROUND

IC501 LC7880 (16-bit A-D Converter for CD)

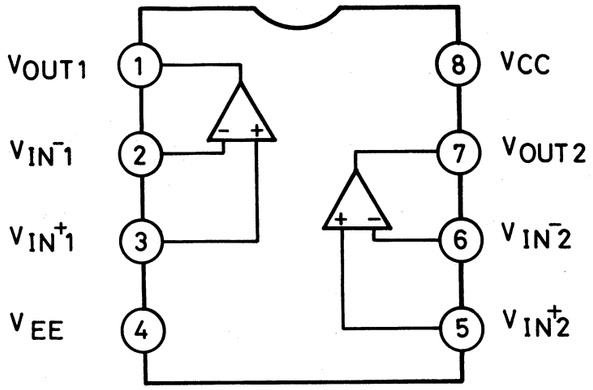


Pins Functions of IC501 (LC7880M)

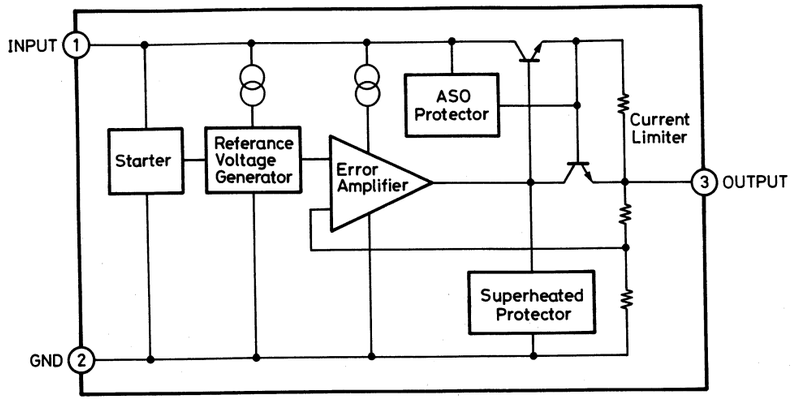
Pin No.	Pin name (Symbol)	Description
1	CH1OUT	Output Terminal of CH-1.
2	VrefH	Input Terminal of Reference Voltage "H".
3	NC	No Connection
4	VDD	+5V Power Supply Terminal.
5	WCLK2	Input Terminal of Word-Clock 2. When IF is in "L", internal signal for latching CH-1 data of digital signal is made by using trailing edge WCLK2. When IF is in "H", it needs WCLK2 to "L".
6	LRCK	Input Terminal of LR Clock. Indicates CH-1 and CH-2 of input digital audio data : indicate CH-1 when LRCK is in "H". indicate CH-2 when LRCK is in "L".
7	WCLK1	Input Terminal of Word-Clock 1. When IF is in "L", internal signal for latching CH-2 data of digital signal is made by using trailing edge of WCLK1. When IF is in "H", internal signal for latching CH-1 and CH-2 data of digital signal is made by trailing edge of WCLK1.
8	DATA	Input Terminal of Digital Audio Data. When IF is in "L", digital audio data is input in bit serial from LSB. When IF is in "H", digital audio data is input in bit serial from MSB.
9	BCLK	Bit-Clock Terminal. This clock is for reading digital audio data into LSI in bit serial and is for PWMDAC.
10	VDD	+5V Power Supply Terminal.
11	TSTOUT	Output Terminal for Testing. Ordinarily, leave this terminal open.
12	TST1	Input Terminal for Testing. Ordinarily, ground these terminals.
13	TST2	Input Terminal for Testing. Ordinarily, ground these terminals.
14	IF	Interface Select Terminal. When IF is in "L", digital audio data is input from LSB side. When IF is in "H", digital audio data is input from MSB side.
15	GND	Ground Terminal
16	VrefL	Input Terminal of Reference Voltage "L".
17	GND	Ground Treminal
18	NC	No Connection
19	NC	No connection
20	CH2OUT	Output Terminal of CH-2.

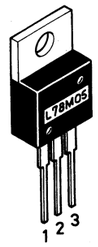
IC BLOCK DIAGRAM

IC502/IC503 LA6458DS (DUAL OPERATIONAL AMPLIFIER)

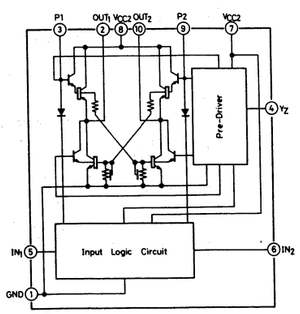


IC601 L78M05 (5V 3-Terminal Constant Voltage Regulated Power Supply)
IC602 L79M05 (–5V 3-Terminal Constant Voltage Regulated Power Supply)





IC901 LB1645N (Motor Driver)



Input		Output		Action
IN_1	IN_2	OUT_1	OUT_2	
0	0	0	0	Brake
1	0	1	0	Normal(Reverse)Rotary
0	1	0	1	Reverse(Normal)Rotary
1	1	0	0	Brake

VOLTAGES OF ICS & TRANSISTORS

IC101 (CXA1081M) (Unit V)

Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	0	0	0	-4.1	-4.1	-4.9	0	0	0	0
Play Voltages		0.7		4.6	3.4					
Measuring Pin No.	11	12	13	14	15	16	17	18	19	20
Stop Voltages	0	0	0	0	-1.0	1.5	-4.9	0	0	0
Play Voltages		-0.7	-0.5						0.1	
Measuring Pin No.	21	22	23	24	25	26	27	28	29	30
Stop Voltages	-4.8	0	-3.5	0	0	2.5	2.2	0.1	0	5.0
Play Voltages			-2.1				2.4	5.0	5.0	

IC201 (CXA1082AQ)

Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	0	0	0	0	-0.65	0	0.35	0	0	5.0
Measuring Pin No.	11	12	13	14	15	16	17	18	19	20
Stop Voltages	0.3	0	0	0.65	0	-4.9	-3.9	4.9	-4.9	0.1
Measuring Pin No.	21	22	23	24	25	26	27	28	29	30
Stop Voltages	4.9	5.0	4.9	4.9	4.9	0	3.0	3.0	2.3	2.3
Measuring Pin No.	31	32	33	34	35	36	37	38	39	40
Stop Voltages	3.6	2.4	4.9	0	0	0	5.0	0	-0.5	2.4
Measuring Pin No.	41	42	43	44	45	46	47	48		
Stop Voltages	0.1	0	-5.0	0	0	0	0	0		

IC301 (CXP5086H)

Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	0	1.5	2.3	5.0	0.1	0	0.2	0	0.1	5.0
Voltages							*3.7	**5.0	**5.0	
Measuring Pin No.	11	12	13	14	15	16	17	18	19	20
Stop Voltages	0	1.0	1.0	0	1.3	1.3	1.3	1.2	4.9	4.9
Voltages										
Measuring Pin No.	21	22	23	24	25	26	27	28	29	30
Stop Voltages	4.9	3.8	0	0	4.9	5.0	0	0	5.0	5.0
Voltages		**0.2					***2.0/0	***0/2.0		
Measuring Pin No.	31	32	33	34	35	36	37	38	39	40
Stop Voltages	0	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Voltages										
Measuring Pin No.	41	42	43	44	45	46	47	48	49	50
Stop Voltages	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Voltages										
Measuring Pin No.	51	52	53	54	55	56	57	58	59	60
Stop Voltages	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Voltages										
Measuring Pin No.	61	62	63	64						
Stop Voltages	3.3	1.7	0	5.0						
Voltages										

NOTES : * (WITH EMPHASIS)
: ** (PLAY)
: *** (OPEN/CLOSE)

VOLTAGES OF ICS & TRANSISTORS

IC401(CXD1130)

(Unit V)

Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	0	0	0	0	2.2	2.5	0	2.5	2.5	0
Play Voltages	0	4.9	2.4	2.7	2.4		4.9			
Measuring Pin No.	11	12	13	14	15	16	17	18	19	20
Stop Voltages	2.8	0	4.9	4.9	4.9	5.0	0.1	4.9	3.8	0
Play Voltages	1.2								0.2	4.9
Measuring Pin No.	21	22	23	24	25	26	27	28	29	30
Stop Voltages	0	4.7	0	0	4.9	4.9	2.5	0	2.7	2.7
Play Voltages		Fluc.						4.9	Fluc.	Fluc.
Measuring Pin No.	31	32	33	34	35	36	37	38	39	40
Stop Voltages	2.7	2.2	4.9	2.3	1.0	4.1	2.2	2.4	2.4	2.4
Play Voltages	Fluc.	Fluc.		Fluc.	Fluc.	Fluc.	Fluc.			
Measuring Pin No.	41	42	43	44	45	46	47	48	49	50
Stop Voltages	2.4	2.4	2.4	Fluc.	Fluc.	Fluc.	Fluc.	Fluc.	4.2	2.1
Play Voltages									4.3	2.5
Measuring Pin No.	51	52	53	54	55	56	57	58	59	60
Stop Voltages	2.0	0	2.5	2.5	4.9	0	0	0	0	1.2
Play Voltages										
Measuring Pin No.	61	62	63	64	65	66	67	68	69	70
Stop Voltages	1.2	3.6	3.6	1.8	1.8	1.8	4.9	2.5	2.5	1.7
Play Voltages		0	0	0	0	0	0			2.0
Measuring Pin No.	71	72	73	74	75	76	77	78	79	80
Stop Voltages	4.8	4.9	4.9	4.9	2.4	2.0	2.0	0	2.4	2.4
Play Voltages		0		0				Fluc.		

IC402(SRAM)

Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	Fluc.	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.2	4.1
Measuring Pin No.	11	12	13	14	15	16	17	18	19	20
Stop Voltages	1.0	0	2.3	2.2	2.6	2.6	2.6	2.1	Fluc.	2.1
Measuring Pin No.	21	22	23	24						
Stop Voltages	4.2	Fluc.	Fluc.	4.9						

IC501(LC7880)

Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	2.1	4.2	0	5.0	0	2.4	2.4	0	1.9	5.0
Measuring Pin No.	11	12	13	14	15	16	17	18	19	20
Stop Voltages	0	0	0	5.0	0	0	0	0	0	2.1

IC502(LA6458DS)

Measuring Pin No.	1	2	3	4	5	6	7	8
Stop Voltages	0.1	0.1	0.1	-4.9	0.1	0.1	0.1	5.0

IC503(LA6458DS)

Measuring Pin No.	1	2	3	4	5	6	7	8
Stop Voltages	0	0	0	-4.9	0	0	0	5.0

NOTES : Fluc. .....FLUCTUATION

VOLTAGES OF ICS & TRANSISTORS

IC691(LB6145)

(Unit V)

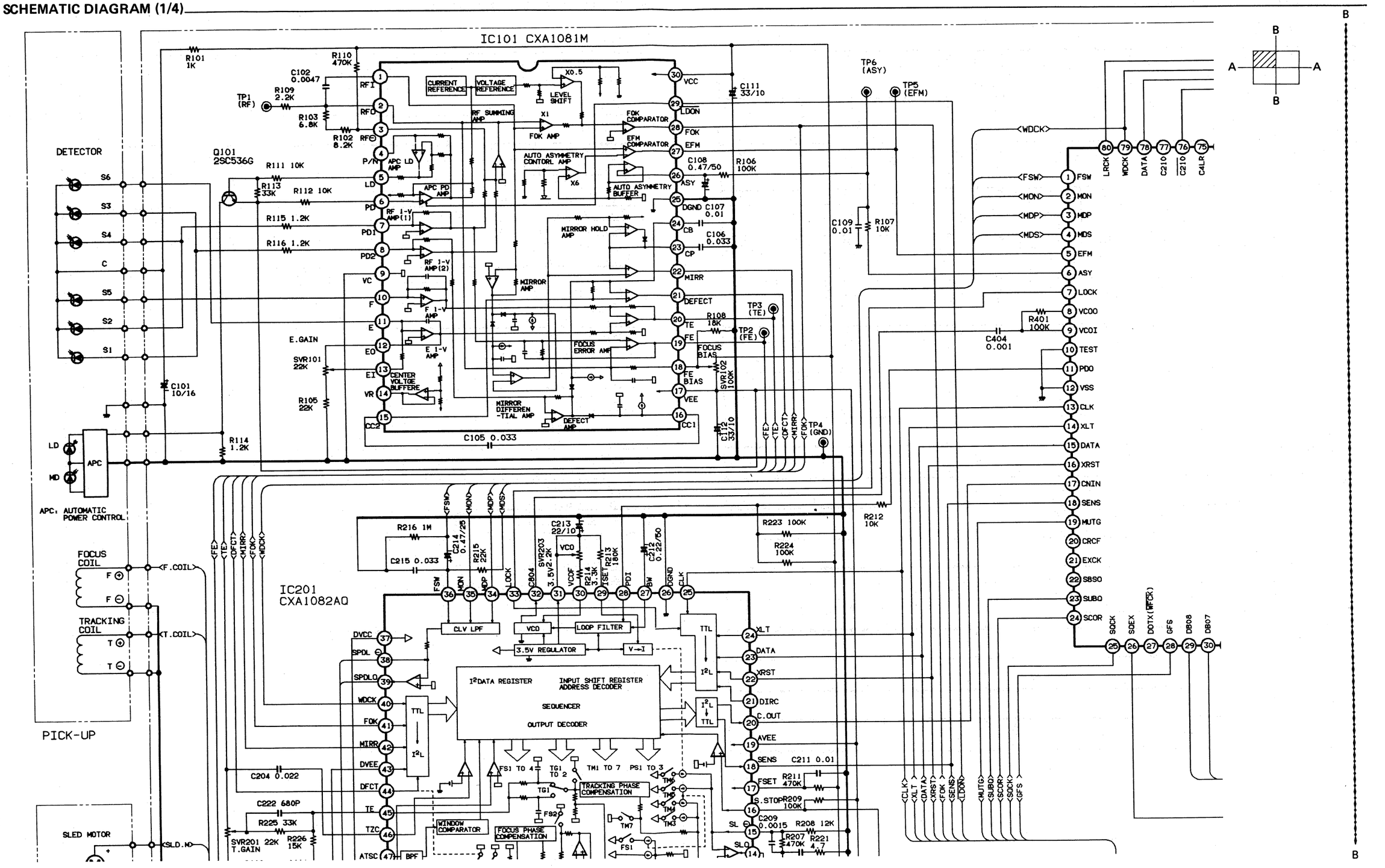
Measuring Pin No.	1	2	3	4	5	6	7	8	9	10
Stop Voltages	0	0.5	0.7	0.4	0	0	11.7	11.7	0.7	0.5
Open Voltages		5.4	6.9	5.4	2.0	0	9.7	7.3	0.7	0.2
Close Voltages		0.2	0.7	5.4	0	2.0	9.7	7.4	6.8	5.3

TRANSISTOR

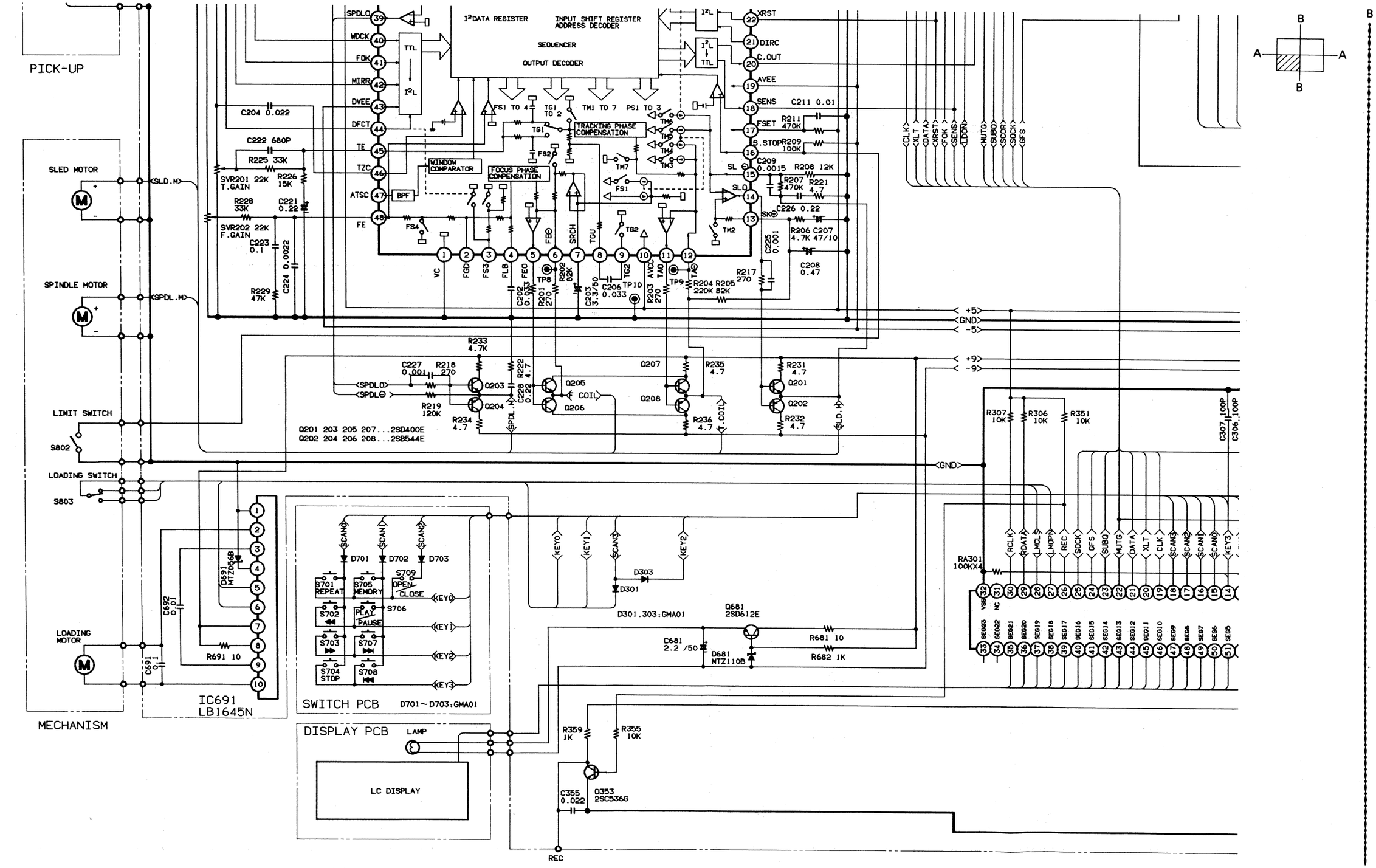
Transistor No.	Q101			Q201			Q202		
Measuring Pin name	E	C	B	E	C	B	E	C	B
Stop Voltages	-4.9	-0.5	-4.3	0	11.7	0.6	0	-12.2	0.6
Play Voltages	-4.9	-4.7	-4.1						
Transistor No.	Q203			Q204			Q205		
Measuring Pin name	E	C	B	E	C	B	E	C	B
Stop Voltages	0	11.7	0.5	0	-12.1	-0.5	0	11.7	-0.6
Play Voltages									
Transistor No.	Q206			Q207			Q208		
Measuring Pin name	E	C	B	E	C	B	E	C	B
Stop Voltages	0	-12.1	-0.6	0	-11.7	0.2	0	-12.1	0.2
Play Voltages									
Transistor No.	Q353								
Measuring Pin name	E	C	B						
Stop Voltages	0	0	4.9						
Play Voltages									
Transistor No.	Q501			Q503			Q504		
Measuring Pin name	E	C	B	E	C	B	E	C	B
Stop Voltages	4.2	4.9	4.8	0	0	0	0	0	0
Play Voltages						Fluc.			Fluc.
Transistor No.	Q505			Q506			Q551		
Measuring Pin name	E	C	B	E	C	B	E	C	B
Stop Voltages	0	0	0.7	0	0	0.7	0.2	-	0
Play Voltages			-4.9			-4.9	* 3.7	3.7	0
Transistor No.	Q552			Q561			Q571		
Measuring Pin name	E	C	B	E	C	B	E	C	B
Stop Voltages	3.7	3.7	3.1	5.4	3.7	5.3	0	5.0	0
Play Voltages	0.2	-4.9	0						
Transistor No.	Q681								
Measuring Pin name	E	C	B						
Stop Voltages	-1.5	10.3	-0.8						
Play Voltages									

NOTES : * (WITH EMPHASIS)

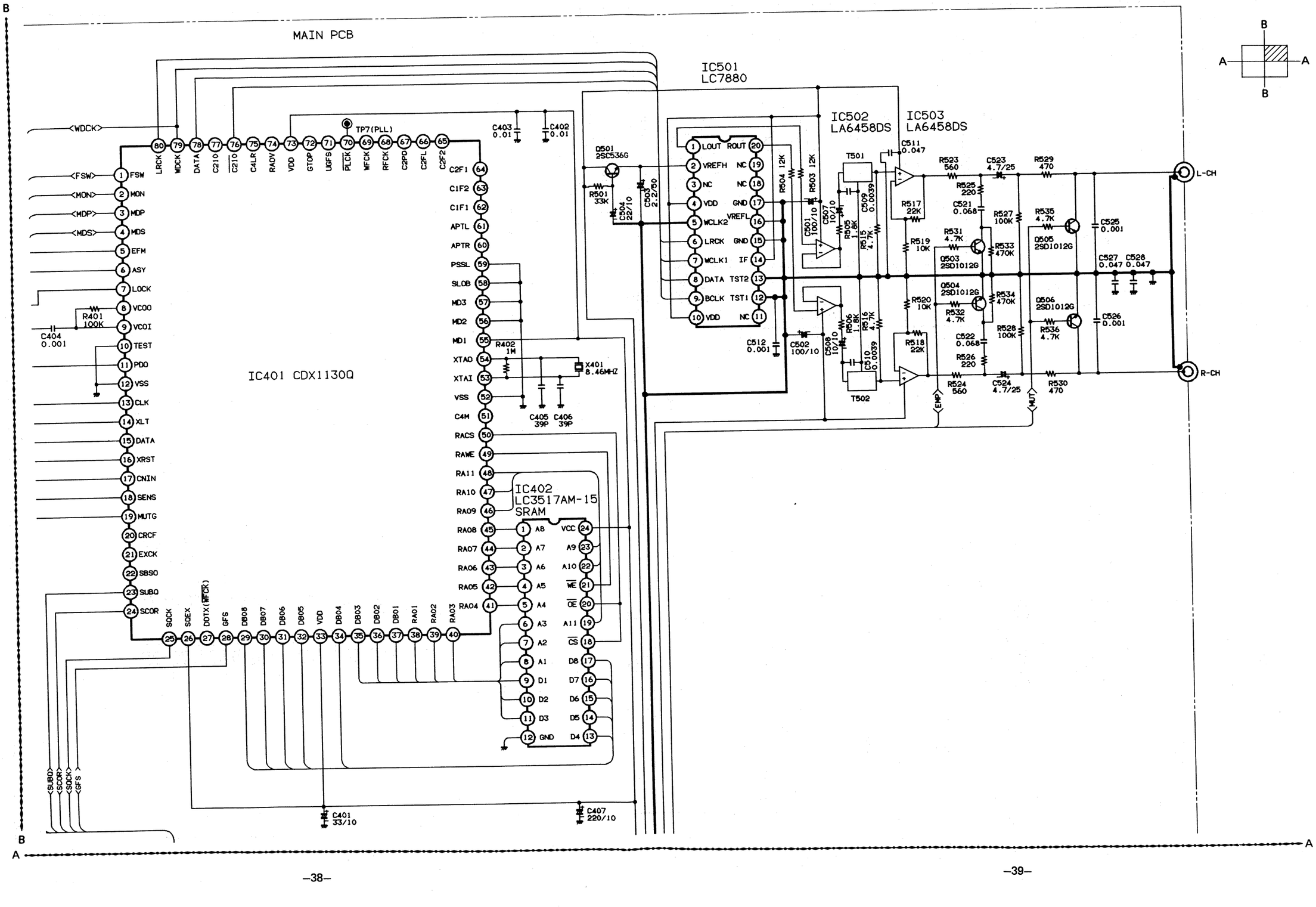
SCHEMATIC DIAGRAM (1/4)



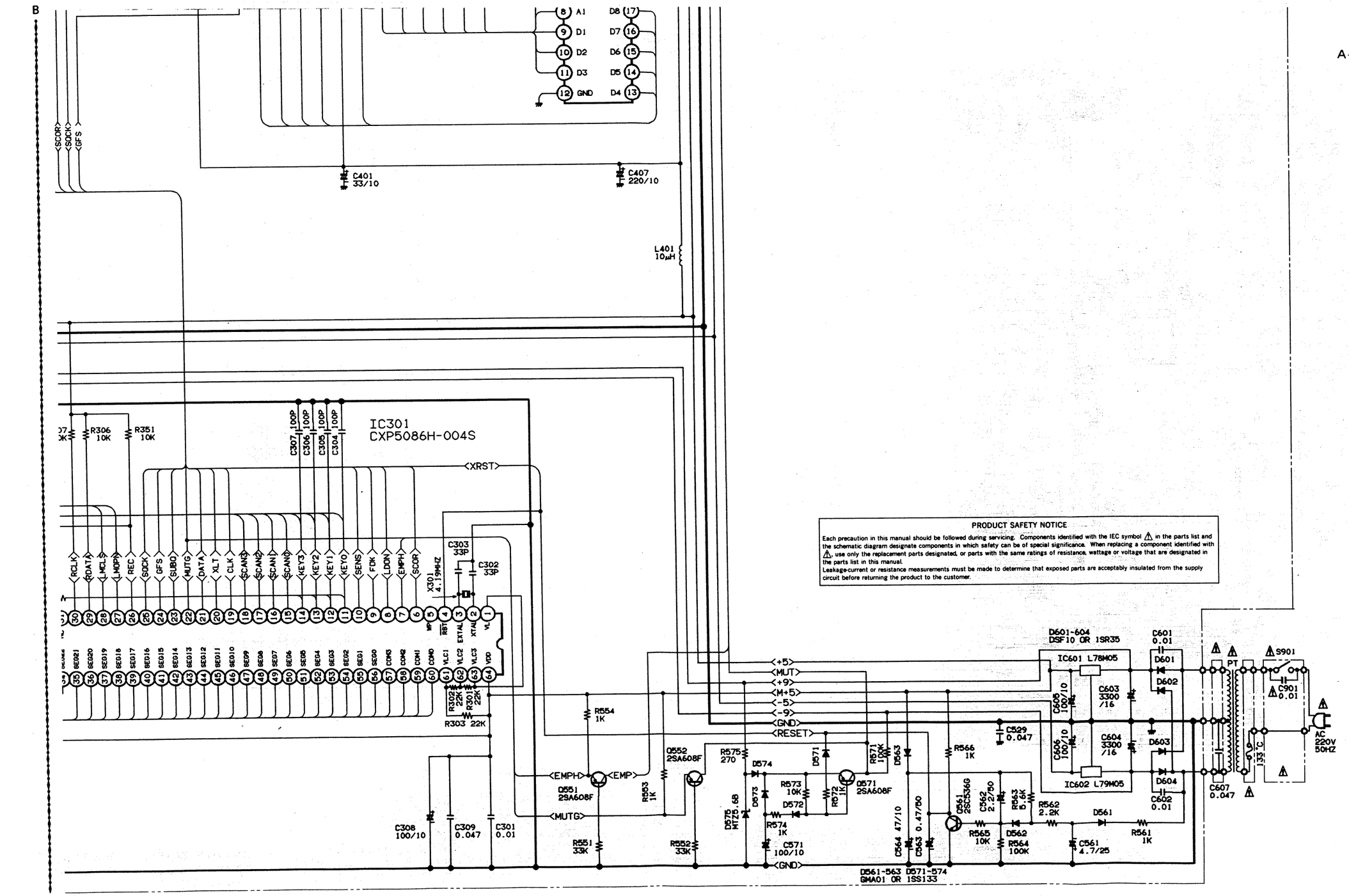
SCHEMATIC DIAGRAM (2/4)



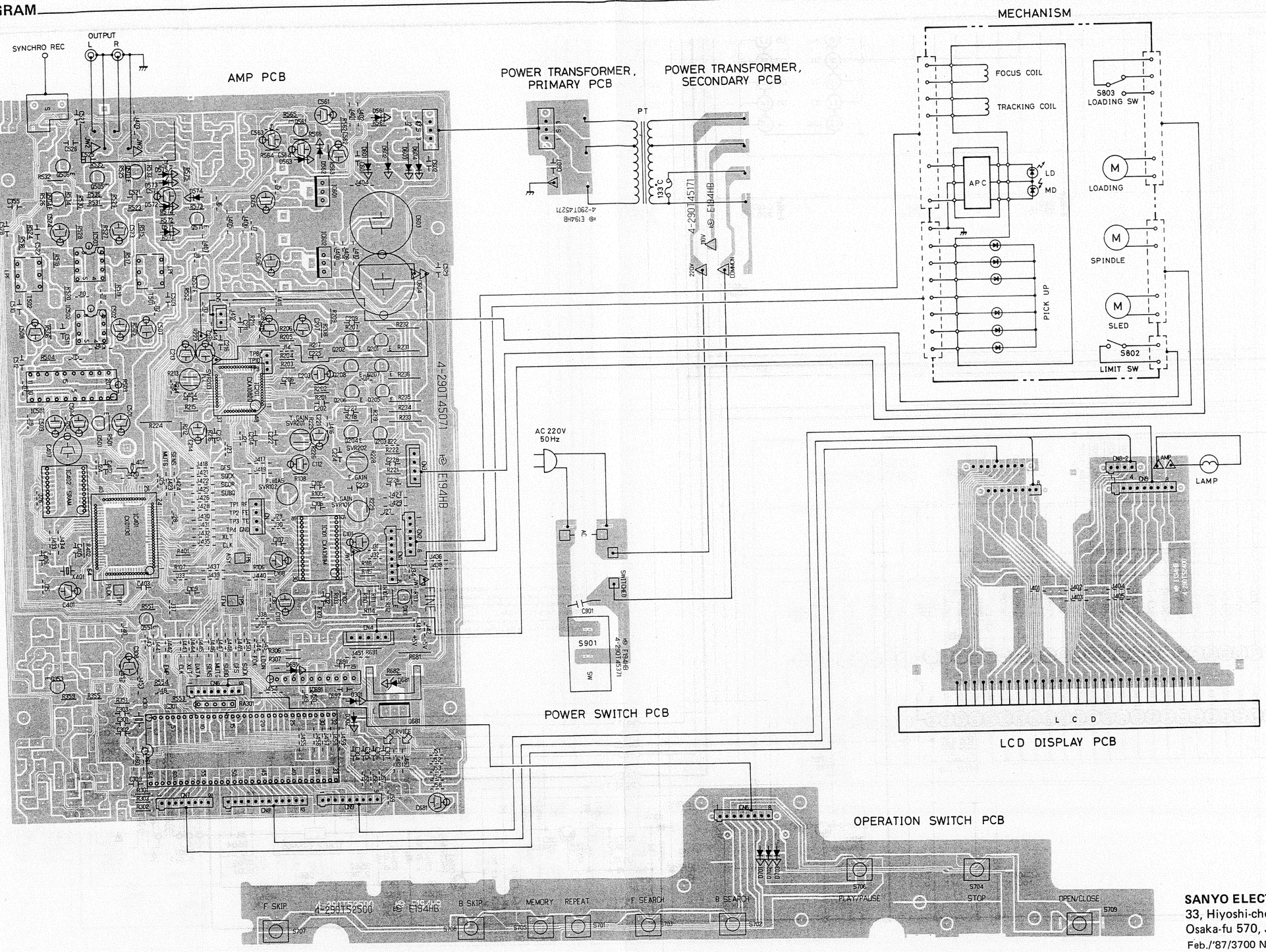
SCHEMATIC DIAGRAM (3/4)



SCHEMATIC DIAGRAM (4/4)



WIRING DIAGRAM



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Osaka-fu 570, Japan
Feb./'87/3700 NS Printed in Japan